

# RAILROAD GAZETTE

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## EDITORIAL ANNOUNCEMENTS.

THE BRITISH AND EASTERN CONTINENTS edition of the Railroad Gazette is published each Friday at Queen Anne's Chambers, Westminster, London. It contains selected reading pages from the Railroad Gazette, together with additional British and foreign matter, and is issued under the name Railway Gazette.

CONTRIBUTIONS.—Subscribers and others will materially assist in making our news accurate and complete if they will send early information

of events which take place under their observation. Discussions of subjects pertaining to all departments of railroad business by men practically acquainted with them are especially desired.

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## CONTENTS

### EDITORIAL:

Old and New Methods of Rail Making...	729
Valuation of Railroads .....	730
The Public Utilities Bill.....	731
New Publications .....	732

### ILLUSTRATED:

An Attractive Suburban Station on the Pennsylvania Lines.....	733
Phillips Automatic Train Stop.....	734
A Modern Tariff .....	735
Proposed Union Station at Ottawa .....	745
Mountain Scenery on the Moffat Road....	749

Proposed East River Bridge; New York Connecting Railroad.....	750
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### MISCELLANEOUS:

The Prussian Railroad System.....	732
Further Aspects of the Southern Situation	735
Public Utilities Bill.....	736
Track Deformations and Their Prevention	746
Plain Words from a Canadian Judge.....	748
Traffic Through the "Soo" Canals and the Detroit River.....	748
Unnecessary Empty Car Movements between Chicago Terminals .....	752

Foreign Railroad Notes:	
Disadvantages of Metal Ties.....	733
Hungarian Gages .....	
Prussian State Railroads .....	744
German Coal Production.....	

### GENERAL NEWS SECTION:

Notes .....	753
Trade Catalogues .....	755
Meetings and Announcements .....	756
Elections and Appointments.....	756
Locomotive Building .....	757
Car Building .....	758
Railroad Structures .....	758
Railroad Construction .....	759
Railroad Corporation News .....	760

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FRIDAY, MAY 31, 1907.

## OLD AND NEW METHODS OF RAIL MAKING.

Rail makers claim that excessive rail breakages are due to the increased fiber stresses under modern heavy engines and cars. The record of at least one western road is contrary to this assertion as shown by the following extract from a letter recently received from the general manager:

"The average rail section rolled at this time for main track weighs from 80 to 90 lbs. to the yard, and the average engine axle loading is from 40,000 to 50,000 lbs. The average rail section rolled 18 to 20 years ago for main track weighed 60 lbs. per yard, and the record of locomotive builders for that period shows that the average engine axle loading was from 25,000 to 32,000 lbs. The resulting fiber stresses under these two conditions are practically the same.

The record of breakages of 60-lb. and 80-lb. rail on this system for the year 1906 discloses rather surprising results, bearing in mind that the same engines with more than 40,000 lbs. axle loads were used in regular service on both weights of rail:

Mileage of 80-lb. rail rolled 1898 to 1906....	30 per cent. of total.
Mileage of 60-lb. rail rolled 1881 to 1887....	70 per cent. of total.
Breakages of 80-lb. rail.....	25 per cent. of total number rails broken.
Breakages of 60-lb. rail.....	75 per cent. of total number rails broken.

One 80-lb. rail was broken for each 20.5 miles of track laid with 80-lb. rail; one 60-lb. rail was broken for each 16.3 miles of track laid with 60-lb. rail, but when we consider that the fiber stress in the 60-lb. rail exceeded the stress in the 80-lb. rail, under actual loading, by 49 per cent., it is apparent that the 60-lb. rail, subjected as it is to so much heavier deflection under its load than the 80-lb. rail, must be a rail of better quality than the 80-lb. rail with which it is compared."

The 80-lb. rails of recent rolling had, on the whole, a better chemical composition than the old light rails of 20 years ago. The difference in quality appears, therefore, to be due to differences in the mechanical and heat treatment during manufacture. Throughout the many recent discussions of rail failures, reference has frequently been made to the old John Brown rails imported from England between 1860 and 1870. These rails, low in carbon and all other hardening constituents, have given from 30 to 35 years' service before wearing out, not breaking. They were made by hammering the ingot into a bloom and rolling and rerolling at low temperature with frequent reheating. An output of 100 tons a week was exceptional. The whole secret of their long life was in the mechanical work put into the metal at low temperature, permeating to every part of the finished rail. Contrast this with the present methods of

rail making. The ingot, 20 in. to 24 in. square, heated to a white heat and insufficiently cropped, is bloomed by a few heavy passes in one mill and immediately run into the rail mill where it is finished, in some cases, in seven passes and run to the cooling beds at a bright red heat. Such methods will produce 1,800 tons a day, but at the expense of violating most of the fundamental principles of the steel makers' art.

Last year at the meeting of the Iron and Steel Institute, Albert Ladd Colby, in defending the output of American rail mills, said:

"The gradual increase in the daily output of American rail-mills during the last decade is not due to an increase in the speed of the rail train, prompted by a reckless desire for increased tonnage, independent of the quality, strength and finish of the product, but to radical improvements resulting in a much better balance between the producing and finishing ends of the mill."

It is not alone, however, the speed of the rail train which determines the quality of the finished rail. Fifteen or twenty years ago the almost universal practice was to reheat the blooms before rolling into rails, and 13 to 15 passes were usually given in the mill. The engines and rolling mills of those days were not powerful enough to reduce an ingot in three passes, and a bloom in seven passes. No attempt was made to finish a white hot ingot in one heat far above the critical temperature of 825 deg. It is putting the cart before the horse to hold the rails before the last pass; the previous overheating and lack of effective mechanical work leave the mass of metal in the interior of the head coarse and weak and cold rolling can only give a thin, hard shell, which soon wears off, exposing the soft metal underneath. With modern mill practice the only way to secure hardness and wearing qualities throughout the head is to increase the carbon to a point where the rail is brittle because of the unavoidable presence of high phosphorus.

The value of annealing rails before finishing and thereby overcoming most of the faults of overheating and rapid working has long been recognized, but sadly neglected, because it introduces a halt in the continuity of the whole process of rail making from the blast furnace to the gagging presses. Robert Job has said:

"The toughness and elasticity of the fine granular structure produced by annealing at the proper temperature permit an increase in the hardening contents considerably beyond the point which otherwise would be safe, thus obtaining greater capacity for wear. Unfortunately, annealed rails, with their freedom from brittleness and internal strain are of hardly more than

theoretical interest, since they cannot be obtained in any considerable quantities under present conditions."

In view of the present deplorable conditions it would seem that any process of improving the quality of rails is of more than theoretical interest.

#### VALUATION OF RAILROADS.

Along with the closing sessions of the state legislatures, after the enactment of their astonishing budgets of anti-railroad legislation, there comes a general belief that the attention, both of the national government and of the state governments, will be turned next winter toward valuation of railroads. In some localities the intention is to use such valuation primarily as a basis for taxation, but the idea that is in the air goes further than this. As suggested by the President of the United States, and as already taken up by a number of states, notably Virginia, Kansas and South Dakota, it indicates the effort to establish a basis for restriction of new issues of capital and for limitation of the rates charged passengers and shippers. We have already discussed the valuation plan, and accepted as our point of view that of Henry Fink, who points out the two cardinal objections, that cost is not identical with value, and that capitalization or value of property has nothing whatever to do with the reasonableness of rates. Yet we believe that the railroads of the country must face a widespread movement for valuation for the purposes named above, and it is of interest to consider both the procedure of the appraisers and the results of the effort to restrict rates and new capital to conform with their findings.

Since the earliest days of taxation, a rough sort of valuation has been placed upon railroad properties, and the crudities of all the systems employed for this purpose have been glaring and well known. In 1903 the Interstate Commerce Commission prepared a 12-year review of state railroad taxation. Up to 1902, the last year covered by this study, it may be said roughly that 32 states and territories ordered the general value of the property to be taken as a basis of taxation, this general value often being specified to include the appraised value of roadbed, track and other property, real and personal, and sometimes, but not always, franchises as well. Ten states in 1902 specified gross earnings arising from business within the state, as a taxation basis either in whole or in part, and in one case (Texas) gross receipts from passenger traffic were made an additional basis besides the general value of the property. Net earnings were made part or all of the basis in Delaware and Virginia, and appraised value of capital stock was required to be made the principal basis (subject to certain deductions) in Connecticut and Massachusetts; one of the two bases in Pennsylvania and Kentucky, and was also made a secondary specified consideration in Delaware, the District of Columbia, Mississippi and New York.

It is easy to understand that the results from all this diversity and from the quite indefinite restriction laid down by statute should have been generally unsatisfactory to commonwealth and to carrier alike. In a report issued this year by an investigating committee of the Wyoming lower house, some of these difficulties are pointed out. A committee finds that the valuation in 1906 was approximately the same as the valuation in 1891, for the simple reason that the appraisers had no idea how to go about their business, and were therefore disposed "to assess the railroads as nearly as possible in accordance with the amount assessed against them the previous year, without regard to actual value and without regard to the assessment on other property. There was nothing before the board in 1906, the records of which we have examined, from which to determine any value; only two roads, the Oregon Short Line and the Chicago & North-Western, fixed opposite the items the value thereof, and in these cases the value given is only from 20 to 30 per cent. of the actual value."

The Wyoming investigating committee expresses the belief that the so-called "stocks and bonds" method, that is, determination of the true value of a road by adding the average value of all the stocks and bonds through a given period, as determined by market prices, would perhaps come nearer to the truth than any other single method, and in this we concur. But the Virginia State Corporation Commission demurs to this point of view and says it knows of no more reliable method of arriving at the value of railroads than to give consideration to the following matters taken together:

- 1st. The original cost of the property so far as it can be shown.
- 2d. The amount of the capital and bonded debt of the company applicable to the property in the state.
- 3d. The market value of the stock and bonds.
- 4th. The cost of reproducing the property anew in its present condition so far as it is shown.

5th. The cost of reproducing the property in its present condition so far as it is known.

- 6th. The properly assessed value of the property for purposes of taxation.
- 7th. The personal knowledge of the property by the Commission.

This curious tangle of ideas, which starts with a non-relevancy and ends with a guess, illustrates pretty well what may be expected of the legislative mind when it turns its attention to valuation. We venture respectfully to suggest that there never lived a statistician who could make seven separate valuations along the lines suggested which would have any useful relation to each other. Of course a stock and bond valuation is the best, because it shows what the people of the country are willing to pay for a certain railroad, without attempting to formulate all the intangible items that cause their belief, including management, which we challenge any equalization board to value by rule.

We are not disposed to quarrel with the attempts to ascertain a reasonable and sane basis for the taxation of railroad property. In some states this taxation is notoriously low at the present time; in some states it is notoriously high, principally for the reason that in the absence of any one reasonable way of determining the road's value it is taxed in each and every way that shows its head, for the benefit both of the commonwealth and of local bodies. As we see the essentials of state taxation they are, first, that a commercial value be placed upon the property, not a physical value which means nothing, and then that the property be so taxed that it will bear a burden proportionate to that of the other commercial values in the same commonwealth. We are frank to admit that there are some states where the railroads have evaded payment of their just proportion, but it is also obvious that there are a number of states where the railroads are forced to pay far more than their just proportion. We do not suppose that a valuation based upon the market price of stocks and bonds is going to be an easy and an all-sufficient method, because, with this valuation established, there remains an apportionment of it between the several states covered by a single system. The apportionment could perhaps be made on the basis of gross earnings arising from traffic carried within the state. It certainly could not be made on the basis of the cost of building or even of replacing the lines as they exist, unless the valuation for purposes of taxation is to be definitely admitted a different one from the true commercial value of a property.

But the clear and important moral of these abortive state attempts at fixing the value of railroad properties is that the thing cannot be done on a physical basis, and that appraisal of cuts, fills, bridges, stations and rolling stock in no way indicates what a road is worth. This is a cardinal principle which the state or national appraisers ought to keep in mind, although they probably will not do so. It should be clearly understood by everybody that a physical valuation will be a wrong valuation. An attempt to determine by such a valuation whether or not a railroad is overcapitalized and to restrict its future issues because the commission or appraisal board believes that the value of a property is overstated in the securities outstanding against it, must lead to very grave injustices and to the restriction of legitimate railroad enterprise. An attempt to use such a valuation or any other valuation as a basis for determining whether or not rates are reasonable is pure folly. To give but a single example of this, suppose we assume that there are two competing railroad routes between cities 300 miles distant, one railroad being the first comer, long established, and a branch of a prosperous system, had, let us assume, not only the choice of routes, but was supplied with abundant funds to build a substantial low-grade line. The other road, reaching the same points by a more roundabout route, had difficulty from the start in finding construction funds and was compelled to build a line abounding in grades and curves. Now it may easily come to pass that the first of these lines may have three times the capital debt outstanding that the second has, and yet it may be doing its business far more efficiently and may be making more money out of it. If an appraisal board decides that it is overcapitalized and reduces its freight charges on that account, the result will presumably be to bankrupt the younger competing line which is under no suspicion of overcapitalization, but must meet the lowest rate between the two points if it expects to do any business.

Examples could be multiplied indefinitely to show that rates and capital are things that have no connection with each other in any region where there is competition direct or indirect (and this includes practically the whole length and breadth of the United States, for competition means not alone the necessity of providing transportation at the rate set by others, but also the necessity of that manufacturers of every commodity be enabled to get their goods



to market as cheaply as other manufacturers in the same line of business do, whether they are located on the same railroad or not). We can freely say, therefore, that we see no good or useful object to be attained in a physical valuation of railroads as a basis of taxation, capitalization or rate making, nor in a commercial valuation as a basis of rate making, and we believe that attempts to restrict the issue of new capital are highly perilous to the interests both of the railroads and of the country they serve, unless these attempts are carried out with a degree of wisdom not ordinarily found. The kind of administrative wisdom we need for such a task is that of an Albert Fink or a Henry Fink; the kind we are pretty sure to get is that of the Virginia commission quoted above, with its inconsequential and self-contradictory ways of arriving at a valuation.

#### THE PUBLIC UTILITIES BILL.

The legislature of the state of New York has passed, by unanimous action in the Lower and all but unanimous action in the Upper House, the Public Service Commissions Law, or the Public Utilities Bill, as it is generally called. This was vetoed on Tuesday of this week by the Mayor of the city of New York on two general grounds, first, that although it extends the power of the public authorities over public service corporations, it violates the principle of home rule in that the New York City Commissioners are to be appointed by the Governor; and, second, that as there is no provision for making the commissions bi-partisan or non-partisan, they can be used under a partisan Governor to influence and coerce corporations and to secure from them money with which to corrupt the electorate. The bill, however, is likely to be re-passed over his veto. This law embodies the ideas of Governor Hughes for control of public service corporations in the state of New York. Politically, it is a remarkable example of the passage of a bill by the force of public opinion, said public opinion being in the main ignorant of its provisions and effect. "Hughes is in favor of it," and for this reason so is the average citizen.

The bill itself is advanced public service legislation in that it recognizes in terms of law new ideas, which have only recently been generally accepted, of the duties of quasi-public corporations. Railroads, street railways, express companies, car companies, freight line companies, pipe lines, gas and electric companies are all made subject to the authority of two public service commissions, whose powers extend as far or farther than the "strongest" commission of the most radical western state. The commissions are to have much more than the rate-making power, usually the extreme mark of commission authority. As was said in the *Railroad Gazette* of April 26, 1907, in which the unamended bill was reviewed, it grants extraordinary powers in the regulation of the details of railroad operation. One of the sections there quoted and characterized as almost surely dangerous, that giving power to the commissions to regulate the number and efficiency of employees, has been omitted from the final draft of the bill; the other, giving power to order changes in the time schedule and number of trains or cars, is still included.

The correct corollary of clothing commissions with such complete powers is to get able men as commissioners. This is attempted in two ways: The salary of each commissioner is to be \$15,000 a year, half as much again as the Governor's money compensation, and the commissioners are appointees of the Governor and removable at his pleasure, this on Governor Hughes' argument that if the commissioners are bad the Governor can be directly held responsible.

On another page we print the law in full. It is important enough to be read from beginning to end by railroad officers in New York or any other state. Without attempting to summarize or discuss it all it may be worth while to comment on certain of its provisions. The state is divided into two districts, the first including New York City, the second all other counties of the state, with a commission of five members in each district. The control of steam railroads throughout the state will come almost entirely under the authority of the commission of the second district whose headquarters are to be at Albany; similarly, street railway lines about New York City will, in most cases, be brought under the authority of the commission of the first district. Each commissioner, the counsel and the secretary to each commission and all additional officers and employees (whom the commission has the power to employ at its pleasure) are to be and be deemed to be public officers. No person shall be a commissioner or hold any position under a commission who owns stock or bonds in any corporation subject to this law. The officers of each commission shall be open for

business from 8 a.m. to 11 p.m. every day in the year. This does not give the commissions the appearance of a sinecure. No commissioner, officer or employee may be offered a free pass or transportation, nor may any commissioner or employee suggest, request or recommend directly or indirectly to any corporation under its authority the appointment of any person to any position or employment. Any person who refuses to answer a question or produce papers when ordered so to do shall be guilty of a misdemeanor. The commission shall not be bound by the technical rules of evidence. No person shall be excused from testifying on the ground that his testimony may incriminate him, but no person having so testified shall be prosecuted or punished for any wrongdoing so disclosed, except perjury committed by him in his testimony. Nothing in this section, however, is to be construed as in any way giving to any corporation immunity of any kind. All actions at law under the act shall be preferred over all other civil causes, except election causes, in all courts of the state of New York. These are some of the more striking of the general provisions in article I.

Article II provides that every corporation shall furnish safe and adequate service at just and reasonable charges, to be determined by judgment of the commissions. Railroads are to build switch and side track connections when reasonably practicable and justified by the amount of business to be done; this to be decided by the commissions. Every common carrier shall file with the commission sworn copies of every contract, agreement or arrangement with any other common carrier relating in any way to transportation of passengers, freight or property. The commissions have power to make regulations for distribution of freight cars to shippers, for switching, for loading and unloading, for demurrage charges and for weighing of cars and freight. No contract in any receipt or bill of lading shall exempt any railroad for any liability from loss, damage or injury caused by it to freight or property. In any action to recover damages sustained by delay in transit, the burden of proof shall be on the carrier to show that such delay was not due to its negligence. No carrier shall be allowed to prevent the continuous carriage of freight and property from a shipping point to destination.

Article III defines the powers of the commissions in respect to railroads and other common carriers. Complaints may be made to the proper commission by any person, upon which the commission shall cause a copy of the complaint to be forwarded to the corporation complained of, accompanied by an order requiring that the complaint be satisfied or that the charges be answered in writing within a specified time. Rates, fares, regulations, practices, equipment, appliances, service repairs or changes, time schedules, number of cars and trains, accidents and accounts of common carriers all come within the power of the commissions. No company shall have the right to carry on any new construction without first obtaining the approval of the proper commission. No railroad franchise or any rights under such franchise shall be transferred nor any agreement made without similar approval. No railroad corporation shall acquire any part of the capital stock of any other railroad in New York State, unless authorized. Except for purposes of collateral security, with the consent of the commission, "no stock corporation of any description, domestic or foreign, shall purchase or acquire, take or hold more than 10 per cent. of the total capital stock issued by any railroad corporation or street railroad corporation or other common carrier organized or existing under or by virtue of the laws of this state." No stock, bonds or other securities for capital account may be issued without the commissions' authority. The commissions shall have no power to authorize the capitalization of any franchise for an amount in excess of the amount actually paid to the public authorities as consideration for its grant. The capital stock of a corporation formed by consolidation of two or more other corporations shall not exceed the sum of the par value of the capital stock of the corporations so consolidated.

Article IV. contains the provisions relating to gas and electric corporations and the regulations of the prices of gas and electricity. Over such companies the commission has sweeping powers, which include fixing the standard quality of gas and electricity, uniform methods of accounting for such corporations, approval of issues of new capital and, on complaint, fixing the maximum price of gas and electricity. The following is a significant provision on this last point:

"If it be alleged and established in an action brought in any court for the collection of any charge for gas or electricity, that a price has been demanded in excess of that fixed by the commission or by statute in the municipality wherein the action arose, no recovery shall be had therein, but the fact that such excessive

charges have been made shall be a complete defense to such action."

Article V abolishes the present Board of Railroad Commissioners, the Commission of Gas and Electricity, the Inspector of Gas Meters and the Board of Rapid Transit Railroad Commissioners.

These comments on the bill make clear the advanced character of many of its provisions. An effective criticism of the whole plan is that the same men are to control gas and electricity and railroads. Although this is logical in grouping these companies under the general head of public service corporations, experience plainly shows that a commission with far less power would have its hands full in dealing with railroads alone. Another criticism is that the commissions' powers violate the rule laid down by President Hadley in his *Railroad Transportation* that in general the more power a commission has the less good it will accomplish. The Massachusetts Railroad Commission established in 1869 is, of course, the classical example. Its power lay in its ability to secure publicity. It had able men as its members and accomplished much. According to President Hadley, "the possession of active general power is a hindrance." Whether or not this will be the case with the new commissions, which combine large provisions for publicity with large powers, will be most important to see. No doubt, as in the case of the Massachusetts commission, their success will depend more than anything else on the quality of the men who are their members.

#### NEW PUBLICATIONS.

*The Design of Walls, Bins and Grain Elevators.* By M. S. Ketcham, New York, 1907. *The Engineering News Publishing Co.* Cloth; 6½ in. x 9 in.; 394 pages. Price, \$4.

With the possible exception of column formulae there is no subject included under the head of mechanics of materials which presents such diversified theory as the subject of retaining walls, which is the basis of all theoretical discussion of the stresses in bins and other similar structures. The practical application of the theory of the stability of retaining walls is not perhaps so difficult as many capable engineers would lead us to believe by their disregard of mathematical analysis in favor of rule of thumb. The author in his introduction truthfully points out the fallacy of a common argument against retaining wall formulas, that many walls which theory shows are on the point of failure have not failed. In the application of the theoretical analysis to such a case the fault is not in the theory but in the data to which the calculations are applied. Professor Ketcham's work is based largely on Rankine's theory, but he also recognizes Coulomb's theory and the formula deduced by Professor William Cain. The opening chapters are devoted entirely to mathematical and graphical discussions of these three theories which after all do not result in wide differences of design when applied to any one specific problem. The author considers not only plain masonry and concrete retaining walls, but the stresses in reinforced concrete walls, and follows this with chapters describing experiments made to determine the pressures and angles of repose of different materials. Chapters six to nine inclusive illustrate examples of numerous retaining walls which have recently been built, together with some data as to their cost. Much more than half of the book is taken up with discussion of the theory and practice of various types of hoppers, coal bins, etc. Part III. includes the theory and practice of steel and concrete grain elevator bins with numerous examples selected from actual practice. The illustrations cover a wide range of work, but many of the drawings have been reproduced on such a small scale that the detail is lost in the maze of printed notes giving dimensions of members.

*Open-Hearth Steel Castings.* By W. M. Carr, Cleveland, Ohio, 1907. *Penton Publishing Co.* Cloth; 118 pages. Price, \$1.50.

This is a collection in book form of a series of articles published in the *Iron Trade Review* and the *Foundry*, giving a complete exposition of the methods involved in the manufacture of open hearth steel castings by both the basic and acid processes. The author writes for the practical foundryman and does not go into complex technicalities. The chapter headings include composition of melting stock, furnace construction, fuels, manipulation of heats, relation between composition and physical properties, discussion of the causes of blow holes and cracks in steel castings, heat treatment and annealing, repairs of steel castings and a chapter giving the estimated cost and profit from an open hearth steel foundry. The author estimates that a five-ton furnace can be added to the equipment of an active iron foundry for \$10,000, and, making a conservative estimate of the output, he shows a net profit of more than 30 per cent. per year.

*Thermal Conductivity of Concrete.* By Ira H. Woolson. New York, 1907. This pamphlet is reprinted from the proceedings of the American Society for Testing Materials and contains a record of some experiments made by Prof. Woolson to determine the heat conducting properties of concrete and the effect of the exposure of concrete to high temperatures with special reference to the adaptability of this

material as fireproof in building construction. The tests, while not altogether conclusive, show that concrete offers an extremely high resistance to the passage of heat.

*Overhead Contact Lines.* By Joseph Mayer. Published by the Author, No. 1 Broadway, New York.

Mr. Mayer's contributions on this subject, which were published in the *Railroad Gazette* and in the proceedings of the American Society of Civil Engineers, have here been expanded and complete calculations given for the design of a new form of overhead suspension. The author claims that the new suspension which he has designed is a safe and durable structure which can be erected at about half the cost of the overhead structures now in use.

*Design of a Railway Bridge Pier.* By Charles Derleth, New York, 1907. *Engineering News Publishing Co.* Pamphlet. Price, 50 cents.

This pamphlet gives an outline of the method of calculating the general features of a masonry pier to carry the superstructure of a railroad bridge. The calculations are based on the conditions found for pier No. 8 of the Baltimore & Ohio bridge at Havre de Grace, Md.

#### The Prussian Railroad System.

The whole of the railroads within the kingdom of Prussia are not yet owned by the government. There are still 73 private railroads with a mileage of about 1,750 miles. Gradually, no doubt, they will all be absorbed, for the government has the right to take them over. On the other hand, the Prussian government works the Hessian railroads as well as most of the Prussian, the two together amounting in round figures to 22,500 miles. In addition it works about 1,250 miles of government railroads. It will be seen that the total Prussian and Hessian railroads worked by the Prussian state railroad system is nearly equal to the whole railroad mileage of the United Kingdom.

The Prussian Minister of Public Works is also Minister of Railways. Indeed, with one exception, the Minister of Public Works has always been a railroad man. He is the supreme authority over the Prussian state railroad system. He is assisted, in the first place, by an Assistant Secretary for Railroads. In the second place, there are five great departments immediately subordinate to him and the Assistant Secretary—administrative, financial, traffic, construction, and technical. In addition, the Minister has under his orders a great body of inspectors who act as his eyes and ears. All the advantages of unification being thus secured—and they are many—both in reducing expenses and in insuring uniformity of practice, the government soon found the need for decentralization.

Just as the King is the head of the Prussian army, and through the Minister of War and the great General Staff ensures centralization, yet decentralization is also provided for by dividing the whole military force into Army Corps, so in the state railroad system decentralization is also carried out. The whole network of 22,500 miles is divided into a number of districts. In the densely-peopled manufacturing and industrial parts of the kingdom the number of districts is large, while in the purely agricultural districts it is small. For example, there is only one district in the province of East Prussia, and another in West Prussia. But in the Rhine Province there are as many as four. The principle kept in view when fixing the area of a district is that the president of the board of the district shall be in a position to supervise his district down to the smallest detail. But the framers of this system also desired to admit the public served to some voice in the management. Accordingly, in each of the districts there is a manager assisted by a board, for the actual working of the lines. And side by side with this board there is a district council comprised partly of railroad officials and partly of representative traders. The traders and the officials have an equal voice. But the functions of the Council are purely advisory. It is consulted as to fixing tariffs, the timetable, and so on. The Minister, in addition to this, is assisted by a provincial council, similar to the District Councils. Thus the users of the railroads have a voice in the management, and though the voice is only advisory, it enables the customers of the lines easily to bring before the officials their case for low rates and fares. Furthermore, these advisory councils can bring before the boards or the Ministry the need for new lines, for extensions, and so on. They can, in fact, apparently bring before the authorities almost any question that they please. Thus the railroad officials, from the Minister down, being in constant communication with leading agriculturists, manufacturers, mine-owners, and traders generally, are kept well acquainted with all the requirements of business. Lastly, the boards are in constant communication with the Chambers of Commerce and of Agriculture.

In addition, there is a special arrangement for the fixing of rates and fares. There exists at the present time a uniform tariff. If any change is to be made General Councils and fixed Tariff Commissions, in which both railroad officials and representatives of industry and agriculture have a seat, have to co-operate. These Councils and Commissions are not Prussian, but German; yet they



prevail throughout Prussia. While, as already said, the District Railroad Councils and the Provincial Railroad Council are merely advisory bodies which are utilized by the Railroad Boards or the Minister, in order to arrive at decisions on tariffs and similar subjects, there sit on the Tariff Commission along with the representatives of the German railroads, the representatives of trade, industry and agriculture, all of them possessing equal voting powers. The resolutions arrived at by these bodies are submitted to the General Council and must be either accepted or rejected by that body. The participation of representatives of trade, both on the District and Provincial Councils and in the Tariff Commission makes it certain that the railroad boards become acquainted with all the views of the different classes of industry.

Further, there is not in Prussia any discrimination between individuals or industries. At the same time, special measures are taken to assist German trade when in competition with foreigners. For example, with the object of favoring the export trade of Germany, export tariffs are created, as a rule in connection with a special German port. On the basis of this tariff goods which are destined for foreign ports are carried at a very low rate to the German port designated. Similarly, the raw materials of manufactures imported from abroad are carried from the port of landing over the Prussian railroads at specially low rates. Thus while every effort is made to prevent the giving of preferential tariffs either to individual Germans or to special German trades to the disadvantage of other Germans, there is an avowed preference given

mileage of track ballasted. This was charged to the larger proportion of metal ties. These are not so firm in place as wood ties, and require more tamping, which causes the ballast to be crushed into smaller pieces. The trough-like form of the metal tie holds water and causes the collection of mud under them; and when this is frozen, the high conductivity of the metal tie causes it to thaw and become soft while the body of material under it is still frozen hard. Various opinions were expressed in the discussion of this paper, but there was substantial agreement as to the fact that iron ties are more destructive of ballast than timber ties.

#### An Attractive Suburban Station on the Pennsylvania Lines.

The Pennsylvania Lines West, Southwest System, have recently completed at Torrence Road, Walnut Hills, a suburb of Cincinnati, Ohio, a small passenger station, which, because of its adaptation to meet certain special local conditions, contains some novel features. Its site is on the side of a considerable hill, the districts it serves lying at both the top and foot of the hill. Accessibility was therefore a primary consideration in determining the character of the facilities to be provided for the convenience of patrons, particularly those desiring to reach the station from the north or uphill side of the tracks. These conditions led to the adoption of an overhead foot bridge rather than a subway for this purpose. The square tower, rising two and one-half stories above the platform, contains a stairway and a baggage elevator running from the basement to the



Torrence Road Passenger Station.

to German importers and German exporters to enable them to compete successfully with foreigners.

Last year the net surplus was 7.52 per cent. of the total amount of capital invested, whereas the preceding year it was only 7.17 per cent., from which it will be perceived that although the railroads were primarily purchased by the government for the promotion of trade, the investment has proved exceedingly profitable, and not only has it been profitable in the past, but it is showing increasing profits year by year. The profits from the railroads are spent in betterments and extensions, and likewise in increasing the locomotives and rolling stock generally. The trade of Germany is growing at so rapid a rate that although new rolling stock is added every year there are complaints each autumn that rolling stock is increasing. It is said that two months ago the orders for the insufficient. Consequently, every year orders for rolling stock are New Year were placed and were so large that they would keep the shops fully employed for the whole of the present year.—*The Statist*, London.

There is in Germany a society for the promotion of the use of wood ties, from which it is natural to expect that all the weak points of metal ties will be brought out. At a recent meeting of this society, a paper was read which said that the effect of the two kinds of ties on the ballast was not sufficiently considered. Within the last 25 years the German railroads have spent \$48,000,000 for ballast material, and the cost has increased much faster than the

covered foot bridge which leads from the tower to a porte cochere and driveway across the tracks. The foot bridge has a reinforced concrete floor and open timber roof, and is supported on two girders of 77-ft. span. The westbound platform is reached from Torrence Road by the covered stairway bracketed to the side of the high retaining wall across from the station. These covered approaches and the butterfly sheds on each platform provide ample protection against the weather.

The station itself is an attractive building of Renaissance design. The walls above the foundations, which are of squared rubble limestone, are a very dark brown pressed brick relieved by band courses and quoins of a lighter shade, and buff colored terra cotta trimmings. The whole being surmounted by a red Spanish tile roof, presents a pleasing contrast to the dark walls and sombre hillside upon which the station stands.

The building is warmed by a hot water system and lighted with electricity, which also drives the elevator for raising and lowering baggage from the basement to the train floor or bridge levels. The train floor contains the general waiting room, ticket office, baggage room, women's waiting room and lavatories, the basement being devoted to boiler rooms and utilitarian purposes. The general and women's waiting rooms and the ticket office are finished in dark Flemish oak, with hardwood floors and tinted plastered walls, and are furnished in the Mission style, presenting a comfortable appearance. The station grounds will be made attractive with sodded slopes and vine covered retaining walls. The

architects were Elzner & Anderson, of Cincinnati. We are indebted to Mr. W. C. Cushing, Chief Engineer of Maintenance of Way of the road, for descriptive data.

#### Phillips Automatic Train Stop.

An apparatus for automatically applying the brakes on a train, invented by Mr. Raymond Phillips, has now been in service on the North Staffordshire Railway, at Newcastle Junction, England, for about two years. Six signals are fitted with track instruments, and the brake-applying mechanism is fitted to one locomotive. The officers of the road speak favorably of it. In this design there are two separate levers on the engine; one to be struck when passing a distant signal at caution and the other to be struck when a stop signal is passed. At the stop signal the application of the brakes is more forcible than at the distant. Whenever the brake apparatus is worked, an audible and a visual signal are given in the cab, and whenever the tripper, fixed on the track, is moved, either by accident or design, a bell is rung in the signal cabin.

Fig. 3 shows the tracks at Newcastle Junction, where six of these automatic stops are installed. The location of each stop is shown by a dotted line connecting with the signal to which it corresponds.

Fig. 1 illustrates the mechanism fixed between the rails near the distant signal. In the lower part of each case is a slide *a* coupled at *b* to the distant signal wire, or in the event of the distant signal being a controlled signal, to the signal rod. The other end *c* of the slide is attached to a balance weight to insure the slide returning to normal. The trippers *d* stand  $12\frac{1}{2}$  in. above the base of rail when up. They have counterbalance weights *e* to keep them upright, and they can be turned in either direction when struck by the lever on the passing engine. The levers are in duplicate, as one might be broken or not make proper contact. When the slide *a* is drawn to the left, owing to the signal being cleared, the stop *f* on the slide comes against the counterbalance *e*, and so turns the lever *d* to the right and clear of the lever on the engine.

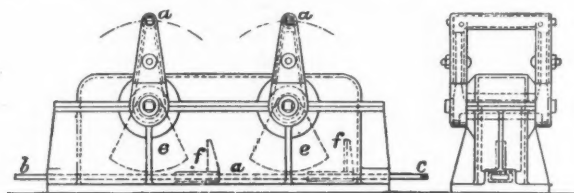


Fig. 1—Apparatus on the Track.

If, however, the signal is "on" the tripper *d* is struck by the lever on the engine.

In the signal box is an electrical repeater with visual indications as to the position of the obstruction. To work this there are electrical contacts on the tripper *d* and thereby the signalman is told if the trip is in proper position when the signal is "on" and whether it has responded to the clearing of the signal when the signal is lowered. Further, a bell is rung whenever the repeater is changed from "on" to "off," whether this is done by the action of the signalman, or by the temporary deflection of the lever, due to its being struck by an approaching train passing the signal in the "on" position. This bell continues ringing until the signalman stops it. The man is thus impressed with the knowledge of the approach of a train.

A similar tripper is fixed at the home signal but not in the same position relatively to the rails as that at the distant signal, and it will strike a second lever on the engine.

Fig. 2 shows the apparatus on the engine. Suspended from the frame is a case in which are two levers *b*, extending about 8 in. below the pivot and engaging the trip *d* (Fig. 1) when the latter is up. One lever is arranged to strike the trip at the distant signal and to apply the continuous brake sufficiently to check the train. The other lever engages the trip at the home signal and applies the brakes sufficiently to bring the train to a stop. In the cab of the engine are two gages *c*<sup>1</sup> and *c*<sup>2</sup> containing indicators representing distant and stop signals. When running, these arms are down or "clear," as the vacuum brake reservoir is normally in connection with the gages through the valves similar to *d* which is the distant valve. Should a distant signal be passed in the "on" position the lower part of lever *b* would be turned to the right and the weighted end of lever, *e*<sup>1</sup>, would drop and fall behind the upper part and so hold it. This would allow the piston valve *d* to fall, so cutting off the vacuum from pipe *f* and opening pipe *g* to the atmosphere which would cause the miniature arm *c*<sup>1</sup> to rise. The other end of lever *e*<sup>1</sup> is coupled to a piston working in cylinder *h*<sup>1</sup> which would then be raised and allow air to enter the train pipe through the syren and pipe *j*. This causes the syren to sound and the brakes to be partially applied. In order to release the brake and stop the noise of the syren the three-way cock *k* has to be turned and this connects the reservoir with the lower side of cylinder *h*<sup>1</sup> through *l*, *m* so that the piston falls and the lever *e*<sup>1</sup> returns

to normal and lifts its weighted end from holding lever *b* off, which would then resume the perpendicular. As the lever *e*<sup>1</sup> resumed its normal position it would restore piston valve *d* and re-open pipe *f* and close *g* and the distant arm would fall again. The apparatus would then be normal, but to do this the driver has had to turn the three-way cock, otherwise the syren would continue sounding and the brake continue applied.

For the stop signal there are also levers, and a cylinder and similar applications of the brake and sounding of the syren. The

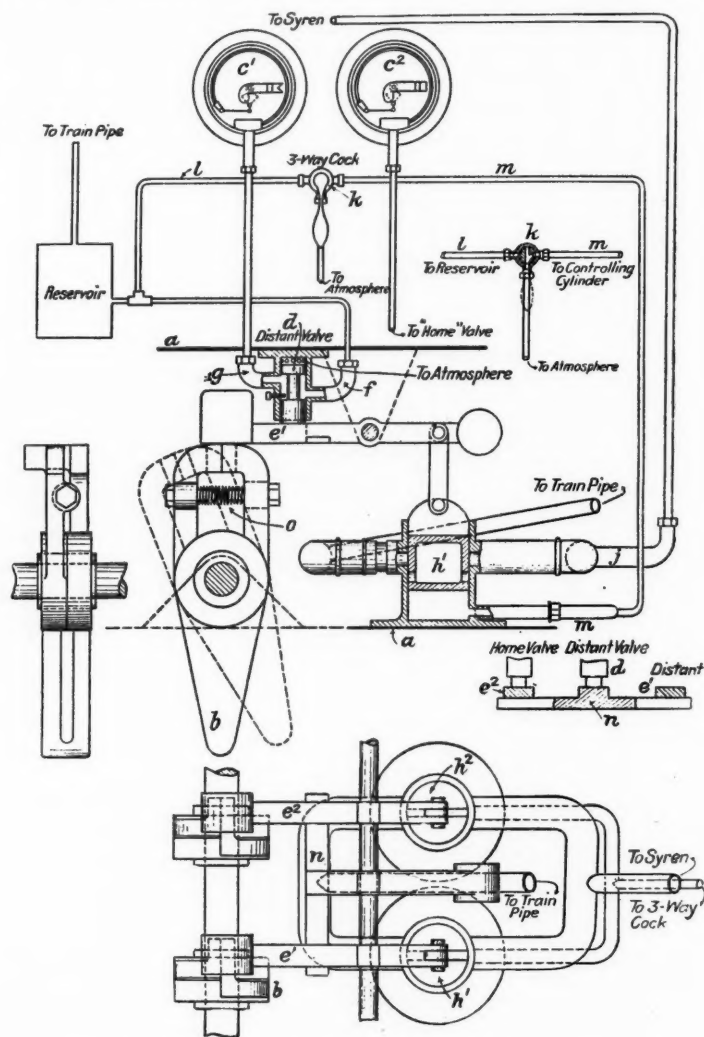


Fig. 2—Arrangement of Apparatus on Locomotive.

lever corresponding to *e*<sup>1</sup> is *e*<sup>2</sup> and the cylinder is *h*<sup>2</sup>. But the stop signal lever *e*<sup>2</sup> controls distant lever *e*<sup>1</sup>, so that both miniature arms will go to "on" when the stop arm is raised. This is to make this form of signaling agree with standard outdoor signaling, and is obtained by using a T lever *n* like the mid-lever of a slot of a signal, and suspending the distant piston valve *d* over the T lever so that when the lever *e*<sup>2</sup> falls it carries with it lever *n*, so allowing valve *d* to fall. When lever *e*<sup>1</sup> falls it carries with it lever *n* but not

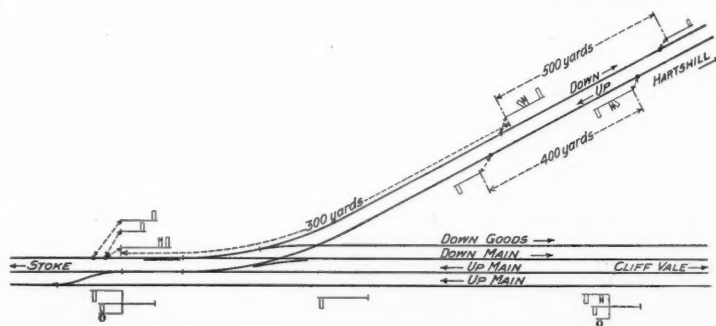


Fig. 3—Plan of Tracks and Signals at Newcastle Junction.

lever *e*<sup>2</sup>. It follows also that a double area is open to the atmosphere when a stop signal is passed at danger, which causes a heavier application of the brakes and which cannot readily be overcome by the engineman.

The lever of the three-way cock is normally down and it is heavily weighted to secure its restoration to that position when turned, so that the bottoms of the cylinders *h*<sup>1</sup> *h*<sup>2</sup> are freely exposed to the atmosphere to insure that their pistons rise freely



when the levers  $e^1$   $e^2$  are operated. The pistons are suspended, so that in the event of anything failing they will fall and apply the brakes.

The striking levers, though mounted on the same shaft, are on separate bushings. Each is made in two parts, like a pair of scissors, and the levers are so constructed that if they broke or if the end was knocked off, the two parts would be forced open by the spring  $o$ , and so the weighted end of the lever would fall into the opening and apply the brake. Or if the lever was swept away from any cause or any other failure occurred, the piston  $d$  would fall and apply the brake.

A similar apparatus has also been designed for use with the Westinghouse air-brake. The address of the Phillips Signal Syndicate is Parr street, Liverpool, England.

#### A Modern Tariff.

We reproduce herewith in full a recently issued tariff of the New York Central & Hudson River and West Shore Railroads covering charges for special freight train movements. The reason for showing the tariff in full just as it stands is to give an example

N. Y. C. & H. R. R. R. TARIFF No. A-6602,  
I. C. C. No. B-5929, C. R. C. No. 832.  
NEW RATES.

WEST SHORE R. R. TARIFF No. A-2561,  
I. C. C. No. B-2278, C. R. C. No. 171.  
NEW RATES.

### New York Central & Hudson River Railroad Co. West Shore Railroad.

IN CONNECTION WITH

Boston & Albany R. R.  
Chicago, Indiana & Southern R. R.  
Cincinnati Northern R. R.  
Cleveland, Cincinnati, Chicago & St. Louis Ry.  
Dunkirk, Allegheny Valley & Pittsburgh R. R.

Indiana Harbor R. R.  
Lake Erie & Western R. R.  
Lake Shore & Michigan Southern Ry.  
Michigan Central R. R.  
Rutland R. R.

#### JOINT FREIGHT TARIFF

OF

#### CHARGES FOR SPECIAL FREIGHT TRAIN MOVEMENTS.

The charges provided in this Tariff will apply between stations on N. Y. C. & H. R. R. R. (including stations on St. L. & A. Ry.), also between stations on West Shore R. R. (including stations on Wallkill Valley R. R.), also between stations on N. Y. C. & H. R. R. R. (including stations on St. L. & A. Ry.) and stations on West Shore R. R. (including Wallkill Valley R. R.), in either direction, and from such stations to stations on the following railroads:

Boston & Albany R. R.  
Chicago, Indiana & Southern R. R.  
Cincinnati Northern R. R.  
Cleveland, Cincinnati, Chicago & St. Louis Ry.  
Dunkirk, Allegheny Valley & Pittsburgh R. R.

Indiana Harbor R. R.  
Lake Erie & Western R. R.  
Lake Shore & Michigan Southern Ry.  
Michigan Central R. R.  
Rutland R. R.

#### Routes—As per Current Class Rate Tariffs.

Issued New York, April 8, 1907.

Effective April 15, 1907

H. D. CARTER, General Freight Agent, N. Y. C. & H. R. R. R., New York City.	W. S. KALLMAN, General Freight Agent, WEST SHORE R. R., New York City.	IRA H. HUBBEL, Lat. Ass't General Freight Agent, New York City.
W. A. NEWMAN, 2nd Asst. General Freight Agent, New York City.	L. M. ALLEN, General Eastern Freight Agent, New York City.	D. E. GELATT, Division Freight Agent, New York City.
H. F. WEST, Division Freight Agent, Albany, N. Y.	SENECA KELLY, Division Freight Agent, Syracuse, N. Y.	E. H. CROLY, Division Freight Agent, Buffalo, N. Y.
E. F. KERSHNER, Division Freight Agent, N. Y. C. & H. R. R. R., Oswego, N. Y.	F. L. WILSON, Division Freight Agent, N. Y. C. & H. R. R. R., Watertown, N. Y.	A. S. GAMBLE, Division Freight Agent, N. Y. C. & H. R. R. R., Malone, N. Y.
C. H. EWINGS, Supt. Freight Transportation, New York City.	ISSUED BY A. C. RUDOLF Chief of Traffic Bureau, New York City	

The proper officers of the above-named carriers will certify to the Interstate Commerce Commission concurrence herein.  
(1700) (File A-4008.) (OVER.)

#### New York Central Freight Tariff, Front Page.

of the complicated requirements of the present Interstate Commerce Commission rules for filing tariffs. The tariff in question is one of the simplest possible as it is not complicated by names of stations and different routes, but shows simply the regulations for making a certain class of special charges. Yet as shown on its front page it is twice dated, seven times indexed and signed by 14 different railroad officers. Besides this it has to be certified on separate copies by the proper officers of 10 other companies.

The tariff itself is of interest because it adopts definite extra charges above the ordinary rates for extra freight train speed. On shipments of five carloads or over for movements of 100 miles or over (less quantities or distances to be charged for at these minimums) special freight train movements can be secured at the extra rate of \$1.25 per train-mile for speed between 10 and 20 miles an hour and \$2.50 per train-mile for speed of over 20 miles an hour, it being provided, however, that if in either case the desired fast movement falls below a speed of 10 miles an hour regular freight train rates only will be applied.

#### Further Aspects of the Southern Situation.

Mr. Finley, of the Southern Railway; Mr. Garrett, of the Seaboard Air Line, and Mr. Murphy, of the Queen & Crescent, have published much interesting comment within the past few months regarding the trouble of railroad companies operating in the South. In an address before the Wilmington, N. C., Chamber of Commerce, March 7, Mr. Emerson, President of the Atlantic Coast Line, brought out certain matters not heretofore placed before public attention. Extracts from this address are printed below:

A law passed by your present legislature reducing passenger rates on certain roads in North Carolina, when applied to the traffic in question, will cost the roads of your state hundreds of thousands of dollars, and would cost the Atlantic Coast Line, based on last year's movement, over \$200,000 per year, and at the same time your Railroad Commission is ordering us to increase the number of passenger trains and build new passenger stations.

There is a most remarkable wave of prosperity going over this good land of ours, probably without parallel in the history of the world. Are railroads sharing in this prosperity? The statistics of Atlantic Coast Line Railroad Company for the past nineteen months will answer this question, so far as its road is concerned. They show that for the nineteen months ending January 31, 1907, its gross earnings increased over the previous nineteen months \$3,960,861, and expenses (not including expenditures for equipment and similar

1. Special freight train movement will be made between stations on N. Y. C. & H. R. R. R. (including stations on St. L. & A. Ry.), also between stations on West Shore R. R. (including stations on Wallkill Valley R. R.), also between stations on N. Y. C. & H. R. R. R. (including stations on St. L. & A. Ry.) and stations on West Shore R. R. (including Wallkill Valley R. R.), in either direction, and from such stations to stations on connecting roads parties to this tariff, for shipments which aggregate not less than five times the minimum carload quantity (or subject to regular freight charges based upon five times the carload minimum quantity when less is shipped) and the following special charges will be made in addition to the regular freight charges applicable to ordinary freight train movement:—

(A) For movement at speed 20 miles per hour or less, \$1.25 per train mile; movement less than 100 miles will be subject to charge for 100 miles. (See Note).

(B) For movement at speed exceeding 20 miles per hour, \$2.50 per train mile; movement less than 100 miles will be subject to charge for 100 miles. (See Note).

(C) If movement contracted at fast speed as above fails and results in speed less than 10 miles per hour, special train charges will be waived and regular freight train rates and quantity minima will apply.

2. The speed per hour under clause B as above will be calculated from the time set for departure of train from point of origin (\*) to the time of placing cars on delivery tracks at destination.

3. The foregoing schedule does not apply to circus or "show" traffic and covers maximum of 25 cars for any one train; any excess over 25 cars will be charged for as a separate train.

4. Special freight train movements will only be arranged upon reasonable advance notice and at the option of this Company, when special motive power and crews are available without serious detriment to its other service and the right is reserved to fill out such trains to not more than 25 cars.

5. Special freight train shipments must be way-billed showing the regular charges as freight charges, prepaid or guaranteed. The way-bills must be endorsed on their face "Special freight train movement," and go forward with the train. The special charges based on the rate per train mile unless prepaid must be guaranteed by responsible parties and collection made by the agent at destination and reported as Miscellaneous Freight Earnings.

6. Shipments from or to connecting roads not parties to this tariff handled by special freight train on N. Y. C. & H. R. R. R. or West Shore R. R. will be treated as having originated or being destined to our junctions with such connecting roads.

\* Date and hour must be shown upon way-bill.

NOTE.—Shippers must designate on shipping receipt what speed is desired.

#### New York Central Freight Tariff, Back Page.

items charged to capital account) increased \$4,823,837, showing that while "prosperity" brought in nearly four million dollars additional revenue, the same "prosperity" took away, in the way of increased wages, increased cost of material, etc., etc., nearly five million dollars, so that for the last nineteen months the Atlantic Coast Line Railroad Company's share in the "prosperity" is represented by minus \$862,976.

There is another phase of this question, which possibly has not occurred to you. It is natural for those who have not had time to analyze the subject to believe that the present great volume of traffic is created wholly by the merchant, the farmer, the fruit grower, etc. It will probably surprise you to know that a material percentage is created by the railroads in their efforts to meet the demand for more equipment, heavier rails, increased terminal facilities, etc.

Our company has ordered in the last two and a half years 10,500 freight cars, 119 passenger equipment cars, and 197 locomotives, the weight of which amounts to about 400,000,000 pounds, making 10,225

carloads, of 20 tons per car, of material which is hauled by some road, and the finished product represents 10,816 cars and locomotives that are hauled to the points of delivery.

Besides, we have ordered within the same period 60,000 tons of steel rail, which means 1,500 cars of 40 tons capacity, which, combined with locomotives and cars, makes a tonnage from these items of about 23,000 cars.

This does not include material received for repairing equipment in use, and other material and supplies of various kinds, which is probably greater in the aggregate than the figures given above.

The coal consumed as fuel by the Atlantic Coast Line Railroad Company loads about 1,500 cars, 100,000 lbs. capacity, per month, or 45,000 cars in the period of two and half years referred to above. All of this coal is hauled by roads reaching the coal fields, and after delivery to us must be hauled various distances, some of it as great as 800 miles, in order to reach the point of consumption.

A railroad has but one source of revenue—that which it derives from the sale of transportation. It, like others, must pay the increased price of material and labor, and it is not only refused the privilege of increasing its charges for transportation under such conditions, but laws have recently been passed, and are being proposed for passage, that materially reduce its charges, and at the same time penalty laws have been enacted to absorb the revenue we are permitted to collect.

Is it fair to say to a railroad: You can only charge so much for your commodity of transportation, and for this you must move it a certain distance within a fixed period, regardless of conditions, or pay a heavy penalty, in addition to actual damages the owner may have sustained? Thus you will see the candle is burning at both ends, and unless corrected, the result is certainly apparent to you all.

Every item we buy has increased in cost within the last three years from 15 to 40 per cent. Our payrolls, representing wages paid employees, increased in December, 1906, over December, 1905, \$127,501, or 19.12 per cent.

The agitation and adverse legislation referred to above has made it impossible for a railroad company, no matter how solvent, to secure, on any reasonable basis, further money for additions and improvements, and I note from the daily papers that many roads in the West and Northwest have been compelled to stop all improvements and developments, except those actually contracted for, and for which the money had already been provided; and it must appear to you gentlemen that other roads will be forced into similar action—not because they do not want to continue this great work, but because they are unable to buy material and labor without money, and they are unable to procure money for this purpose.

#### The Public Utilities Bill.

On May 15, the measure commonly called the Public Utilities Bill, providing for regulation of railroads and public service companies in New York State, the most important of the reform legislation of Governor Hughes, passed the Assembly by a unanimous vote. On May 22, hastened by an "emergency message" from the Governor, it passed the Senate by a vote of 41 to 6. The Assembly immediately concurred unanimously in the Senate's amendments. The bill has been vetoed by the Mayor of New York City and must be repassed over his veto and signed by the Governor before it becomes a law. Not only because this bill is of great importance to all public service corporations in New York State, but, furthermore, as it is likely to be the model for similar public service legislation in other states, it is given below in full.

AN ACT TO ESTABLISH THE PUBLIC SERVICE COMMISSIONS AND PRESCRIBING THEIR POWERS AND DUTIES, AND TO PROVIDE FOR THE REGULATION AND CONTROL OF CERTAIN PUBLIC SERVICE CORPORATIONS AND MAKING AN APPROPRIATION THEREFOR.

The people of the state of New York, represented in Senate and Assembly, do enact as follows:

#### THE PUBLIC SERVICE COMMISSIONS LAW.

Article I.—Public service commissions; general provisions (Sections 1-23).

Article II.—Provisions relating to railroads, street railroads and common carriers (Sections 25-40).

Article III.—Provisions relating to the powers of the commissions in respect to railroads, street railroads and common carriers (Sections 45-60).

Article IV.—Provisions relating to gas and electric corporations; regulation of price of gas and electricity (Sections 65-77).

Article V.—Commissions and offices abolished; saving clause; repeal (Sections 80-89).

#### ARTICLE I.

##### PUBLIC SERVICE COMMISSIONS; GENERAL PROVISIONS.

Section 1. *Short title.*—This chapter shall be known as the public service commissions law, and shall apply to the public services herein described, and to the commissions hereby created.

Section 2. *Definitions.*—The term "commission," when used in this act,

means either public service commission, hereby created, which by the terms of this act is vested with the power or duty in question.

The term "commissioner," when used in this act, means one of the members of such commission.

The term "corporation," when used in this act, includes a corporation, company, association and joint-stock association.

The word "person," when used in this act, includes an individual and a firm or copartnership.

The term "street railroad," when used in this act, includes every railroad by whatsoever power operated, or any extension or extensions, branch or branches thereof, for public use in the conveyance of persons or property for compensation, being mainly upon, along, above or below any street, avenue, road, highway, bridge or public place in any city, village or town, and including all switches, spurs, tracks, right of trackage, subways, tunnels, stations, terminals and terminal facilities of every kind used, operated, controlled or owned by or in connection with any such street railroad; but the said term "street railroad," when used in this act, shall not include a railroad constituting or used as part of a trunk line railroad system.

The term "railroad," when used in this act, includes every railroad, other than a street railroad, by whatsoever power operated for public use in the conveyance of persons or property for compensation, with all bridges, ferries, tunnels, switches, spurs, tracks, stations and terminal facilities of every kind used, operated, controlled or owned by or in connection with any such railroad.

The term "street railroad corporation," when used in this act, includes every corporation, company, association, joint-stock association, partnership and person, their lessees, trustees or receivers appointed by any court whatsoever, owning, operating, managing or controlling any street railroad or any cars or other equipment used thereon or in connection therewith.

The term "railroad corporation," when used in this act, includes every corporation, company, association, joint-stock association, partnership and person, their lessees, trustees or receivers appointed by any court whatsoever, owning, operating, managing or controlling any railroad or any cars or other equipment used thereon or in connection therewith.

The term "common carrier," when used in this act, includes all railroad corporations, street railroad corporations, express companies, car companies, sleeping-car companies, freight companies, freight-line companies and all persons and associations of persons, whether incorporated or not, operating such agencies for public use in the conveyance of persons or property within this state.

The term "gas corporation," when used in this act, includes every corporation, company, association, joint-stock association, partnership and person, their lessees, trustees or receivers appointed by any court whatsoever, owning, operating, managing or controlling any plant or property for manufacturing and distributing and selling for distribution or distributing illuminating gas (natural or manufactured) for light, heat or power.

The term "electrical corporation," when used in this act, includes every corporation, company, association, joint-stock association, partnership and person, their lessees, trustees or receivers appointed by any court whatsoever (other than a railroad or street railroad corporation generating electricity for its own use exclusively), owning, operating, managing or controlling any plant or property for generating and distributing or generating and selling for distribution, or distributing electricity for light, heat or power or for the transmission of electric current for such purposes.

The term "transportation of property or freight," when used in this act, includes any service in connection with the receiving, delivery, elevation, transfer in transit, ventilation, refrigeration, icing, storage and handling of the property or freight transported.

The term "municipality," when used in this act, includes a city, village, town or lighting district, organized as provided by a general or special act.

Section 3. *Public service districts.*—There are hereby created two public service districts, to be known as the first district and the second district. The first district shall include the counties of New York, Kings, Queens and Richmond. The second district shall include all other counties of the state.

Section 4. *Commissions established; appointment; removal; terms of office.*—There shall be a public service commission for each district, and each commission shall possess the powers and duties hereinafter specified, and also all powers necessary or proper to enable it to carry out the purposes of this act. The commission of the first district shall consist of five members and the commission of the second district shall consist of five members, to be appointed by the governor, by and with the advice and consent of the senate, one of whom designated by the governor shall, during his term of office, be the chairman of the commission of which he is a member. Each commissioner shall be a resident of the district for which he is appointed.

The governor may remove any commissioner for inefficiency, neglect of duty or misconduct in office, giving to him a copy of the charges against him, and an opportunity of being publicly heard in person or by counsel in his own defense, upon not less than ten days' notice. If such commissioner shall be removed the governor shall file in the office of the secretary of state a complete statement of all charges made against such commissioner, and his findings thereon, together with a complete record of the proceedings.

Of the members of the commission in each district first appointed hereunder, one shall hold office until February 1, 1909, one until February 1, 1910, one until February 1, 1911, one until February 1, 1912, and one until February 1, 1913; the term of office of each commissioner so appointed shall begin on the first day of July, 1907. Upon the expiration of each of such terms, the term of office of each commissioner thereafter appointed shall be five years from the first of February. Vacancies shall be filled by appointment for the unexpired term.

Section 5. *Jurisdiction of commissions.*—The jurisdiction, supervision, powers and duties of the public service commission in the first district shall extend under this act:

1. To railroads and street railroads lying exclusively within that district, and to the persons or corporations owning, leasing, operating or controlling the same.

2. To street railroads any portion of whose lines lies within that dis-



trict, to all transportation of persons or property thereon within that district or from a point within either district to a point within the other district, and to the persons or corporations owning, operating, controlling or leasing the said street railroads; provided, however, that the commission for the second district shall have jurisdiction over such portion of the lines of said street railroads as lies within the second district, and over the persons or corporations owning, operating, controlling or leasing the same, so far as concerns the construction, maintenance, equipment, terminal facilities and local transportation facilities of said street railroads within the second district.

3. To such portion of the lines of any other railroad as lies within that district, and to the person or corporation owning, leasing, operating or controlling the same, so far as concerns the construction, maintenance, equipment, terminal facilities and local transportation facilities, and local transportation of persons or property within that district.

4. To any common carrier operating or doing business exclusively within that district.

5. To the manufacture, sale or distribution of gas and electricity for light, heat and power in said district, and to the persons or corporations owning, leasing, operating or controlling the same.

6. And, in addition thereto, the commission in the first district shall have and exercise all powers heretofore conferred upon the board of rapid transit railroad commissioners under chapter four of the laws of 1891, entitled "An act to provide for rapid transit railways in cities of over one million inhabitants," and the acts amendatory thereto.

All jurisdiction, supervision, powers and duties under this act not specifically granted to the public service commission of the first district shall be vested in, and be exercised by, the public service commission of the second district, including the regulation and control of all transportation of persons or property, and the instrumentalities connected with such transportation, on any railroad other than a street railroad from a point within either district to a point within the other district.

Section 6. *Counsel to the commissions.*—Each commission shall appoint as counsel to the commission an attorney and counselor-at-law of the state of New York, who shall hold office during the pleasure of the commission. Each counsel to the commission shall, subject to the approval of the commission, have the power to appoint, and at pleasure remove, attorneys and counselors-at-law, to assist him in the performance of his duties, and also to employ and remove stenographers and process-servers.

Section 7. *Secretary to the commissions.*—Each commission shall have a secretary to be appointed by it and to hold office during its pleasure. It shall be the duty of the secretary to keep a full and true record of all proceedings of the commission, of all books, maps, documents and papers ordered filed by the commission and of all orders made by a commissioner and of all orders made by the commission or approved and confirmed by it and ordered filed, and he shall be responsible to the commission for the safe custody and preservation of all such documents at its office. Under the direction of the commission the secretary shall have general charge of its office, superintend its clerical business and perform such other duties as the commission may prescribe. He shall have power and authority to administer oaths in all parts of the state, so far as the exercise of such power is properly incidental to the performance of his duty or that of the commission. The secretary shall designate, from time to time, one of the clerks appointed by the commission to perform the duties of secretary during his absence and, during such time, the clerk so designated shall at the office possess the powers of the secretary of the commission.

Section 8. *Additional officers and employees.*—Each commission shall have power to employ, during its pleasure, such officers, clerks, inspectors, experts and employees as it may deem to be necessary to carry out the provisions of this act, or to perform the duties and exercise the powers conferred by law upon the commission.

Section 9. *Oath of office; eligibility of commissioners and officers.*—Each commissioner and each person appointed to office by a commission or by counsel to a commission shall, before entering upon the duties of his office, take and subscribe the constitutional oath of office. No person shall be eligible for appointment or shall hold the office of commissioner or be appointed by a commission or by counsel to a commission to, or hold, any office or position under a commission, who holds any official relation to any common carrier, railroad corporation, street railroad corporation, gas corporation or electric corporation subject to the provisions of this act, or who owns stocks or bonds therein.

Section 10. *Offices of commissions; meetings; official seal; stationery, etc.*—1. The principal office of the commission of the first district shall be in the borough of Manhattan, city of New York; and the office of the second district shall be in the city of Albany, in rooms designated by the trustees of public buildings. Each commission shall hold stated meetings at least once a month during the year at its office. Each shall have an official seal to be furnished and prepared by the secretary of state as provided by law. The offices shall be supplied with all necessary books, maps, charts, stationery, office furniture, telephone and telegraph connections and all other necessary appliances, to be paid for in the same manner as other expenses authorized by this act.

2. The offices of each commission shall be open for business between the hours of eight o'clock in the morning and eleven o'clock at night every day in the year, and one or more responsible persons, to be designated by the commission or by the secretary under the direction of the commission, shall be on duty at all times in immediate charge thereof.

Section 11. *Quorum; powers of a commissioner.*—A majority of the commissioners shall constitute a quorum for the transaction of any business, for the performance of any duty or for the exercise of any power of the commission, and may hold meetings of the commission at any time or place within the state. Any investigation, inquiry or hearing which either commission has power to undertake or to hold may be undertaken or held by or before any commissioner. All investigations, inquiries, hearings and decisions of a commissioner shall be and be deemed to be the investigations, inquiries, hearings and decisions of the commission and every order made by a com-

missioner, when approved and confirmed by the commission and ordered filed in its office, shall be and be deemed to be the order of the commission.

Section 12. *Counsel to the commissions; duties.*—It shall be the duty of counsel to a commission to represent and appear for the people of the state of New York and the commission, in all actions and proceedings involving any question under this act, or under or in reference to any act or order of the commission, and, if directed to do so by the commission, to intervene, if possible, in any action or proceeding in which any such question is involved; to commence and prosecute all actions and proceedings directed or authorized by the commission, and to expedite in every way possible final determination of all such actions and proceedings; to advise the commission and each commissioner when so requested in regard to all matters in connection with the powers and duties of the commission and of the members thereof, and generally to perform all duties and services as attorney and counsel to the commission which the commission may reasonably require of him.

Section 13. *Salaries and expenses.*—The annual salary of each commissioner shall be fifteen thousand dollars (\$15,000). The annual salary of counsel to a commission shall be ten thousand dollars (\$10,000). The annual salary of a secretary to a commission shall be six thousand dollars (\$6,000). All officers, clerks, inspectors, experts and employees of a commission, and all persons appointed by the counsel to a commission, shall receive the compensation fixed by the commission.

The commissioners, counsel to the commission and the secretary, and their officers, clerks, inspectors, experts and other employees, shall have reimbursed to them all actual and necessary traveling and other expenses and disbursements incurred or made by them in the discharge of their official duties.

Section 14. *Payment of salaries and expenses.*—1. The salaries of the commissioners, the counsel to the commission, and the secretary to the commission in the first district shall be audited and allowed by the state comptroller, and paid monthly by the state treasurer upon the order of the comptroller out of the funds provided therefor. All other salaries and expenses of the commission of the first district shall be audited and paid as follows: The board of estimate and apportionment of the city of New York, or other board or public body on which is imposed the duty and in which is vested the power of making appropriations of public moneys for the purposes of the city government shall, from time to time, on requisition duly made by the public service commission of the first district, appropriate such sum or sums of money as may be requisite and necessary to enable it to do and perform, or cause to be done and performed, the duties in this or in any other act prescribed, and to provide for the expenses and the compensation of the employees of such commission, and such appropriation shall be made forthwith upon presentation of a requisition from the said commission, which shall state the purposes for which such moneys are required by it. In case the said board of estimate and apportionment, or such other board or public body, fail to appropriate such amount as the said commission deems requisite and necessary, the said commission may apply to the appellate division of the supreme court in the first department, on notice to the board of estimate and apportionment or such other board or public body aforesaid, to determine what amount shall be appropriated for the purposes so required and the decision of said appellate division shall be final and conclusive; and the city shall not be liable for any indebtedness incurred by the said commission in excess of such appropriation or appropriations. It shall be the duty of the auditor and comptroller of said city, after such appropriation shall have been duly made, to audit and pay the proper expenses and compensation of the employees of said commission other than its counsel and secretary, upon vouchers therefor, to be furnished by the said commission, which payments shall be made in like manner as payments are now made by the auditor, comptroller or other public officers of claims against and demands upon such city; and for the purpose of providing funds with which to pay the said sums, the comptroller or other chief financial officer of said city, is hereby authorized and directed to issue and sell revenue bonds of such city in anticipation of receipt of taxes and out of the proceeds of such bonds to make the payments in this section required to be made. The amount necessary to pay the principal and interest of such bonds shall be included in the estimates of moneys necessary to be raised by taxation to carry on the business of said city, and shall be made a part of the tax levy for the year next following the year in which such appropriations are made. The commission may provide that all or any portion of the expenses so incurred and paid by said city as in this section provided, and for which said city shall be liable, shall be repaid, with interest, by the bidder or bidders at the public sale of the rights, privileges and franchises, as provided in chapter four of the laws of 1891, entitled "An act to provide for rapid transit railways in cities of over 1,000,000 inhabitants," and the acts amendatory thereto. The said comptroller shall pay the proper salaries and the expenses of the said commission upon its requisition, for the remainder of the fiscal year after this act shall take effect, from any funds that may have been heretofore appropriated for the board of rapid transit railroad commissioners, which appropriation is hereby transferred to the credit of the public service commission of the first district. In case the said appropriation shall not be sufficient to meet such salaries and expenses, the comptroller of said city is hereby authorized and directed to issue and sell revenue bonds of said city, in anticipation of receipt of taxes, as hereinbefore provided.

2. All salaries and expenses of the commission in the second district shall be audited and allowed by the state comptroller and paid monthly by the state treasurer upon the order of the comptroller, out of the funds provided therefor.

Section 15. *Certain acts prohibited.*—Every commissioner, counsel to a commission, the secretary of a commission, and every person employed or appointed to office, either by a commission or by the counsel to a commission, is hereby forbidden and prohibited to solicit, suggest, request or recommend, directly or indirectly, to any common carrier, railroad corporation or street railroad corporation, or to any officer, attorney, agent or employee thereof the appointment of any person to any office, place, position or employment. And every common carrier, railroad corporation, street railroad corporation,

gas corporation and electrical corporation and every officer, attorney, agent and employee thereof, is hereby forbidden and prohibited to offer to any commissioner, to counsel to a commission, to the secretary thereof, or to any person employed by a commission or by the counsel to a commission, any office, place, appointment or position, or to offer or give to any commissioner, to counsel to a commission, to the secretary thereof, or to any officer employed or appointed to office by the commission or by the counsel to the commission, any free pass or transportation or any reduction in fare to which the public generally are not entitled or free carriage for freight or property or any present, gift or gratuity of any kind. If any commissioner, counsel to a commission, the secretary thereof or any person employed or appointed to office by a commission or by counsel to a commission, shall violate any provision of this section he shall be removed from the office held by him. Every commissioner, counsel to the commission, the secretary thereof and every person employed or appointed to office by the commission or by counsel to the commission, shall be and be deemed to be a public officer.

Section 16. *Annual report of commissions.*—All proceedings of each commission and all documents and records in its possession shall be public records, and each commission shall make an annual report to the legislature on or before the second Monday of January in each year, which shall contain copies of all orders issued by it and any information in the possession of the commission which it shall deem of value to the legislature and the people of the state. Five hundred copies of each report, together with abstracts of the reports to such commission of common carriers, railroad corporations and street railroad corporations, and gas and electric corporations, in addition to the regular number prescribed by law, shall be printed as a public document of the state, bound in cloth, for the use of the commissioners and to be distributed by them in their discretion to railroad, street railroad, gas and electrical corporations and other persons interested therein.

Section 17. *Certified copies of papers filed to be evidence.*—Copies of all official documents and orders filed or deposited according to law in the office of either commission, certified by a commissioner or by the secretary of the commission to be true copies of the originals, under the official seal of the commission, shall be evidence in like manner as the originals.

Section 18. *Fees to be charged and collected by the commissions.*—Each commission shall charge and collect the following fees: For copies of papers and records not required to be certified or otherwise authenticated by the commission, 10 cents for each folio; for certified copies of official documents and orders filed in its office, 15 cents for each folio, and one dollar for every certificate under seal affixed thereto; for certifying a copy of any report made by a corporation to the commission, \$2.00; for each certified copy of the annual report of the commission, \$1.50; for certified copies of evidence and proceedings before the commission, 15 cents for each folio. No fees shall be charged or collected for copies of papers, records or official documents, furnished to public officers for use in their official capacity, or for the annual reports of the commission in the ordinary course of distribution. All fees charged and collected by the commission of the first district shall belong to the city of New York, and shall be paid monthly, accompanied by a detailed statement thereof, into the treasury of the city to the credit of the general fund, and all fees charged and collected by the commission of the second district shall belong to the people of the state, and shall be paid monthly, accompanied by a detailed statement thereof, into the treasury of the state to the credit of the general fund.

Section 19. *Attendance of witnesses and their fees.*—1. All subpoenas shall be signed and issued by a commissioner or by the secretary of a commission and may be served by any person of full age. The fees of witnesses required to attend before a commission, or a commissioner, shall be two dollars for each day's attendance, and five cents for every mile of travel by the nearest generally traveled route in going to and from the place where attendance of the witness is required, such fees to be paid when the witness is excused from further attendance; and the disbursements made in the payment of such fees shall be audited and paid in the first district in the same manner provided for the payment of expenses of the commission.

2. If a person subpoenaed to attend before a commission, or a commissioner fails to obey the command of such subpoena, without reasonable cause, or if a person in attendance before a commission, or commissioner, shall, without reasonable cause, refuse to be sworn or to be examined or to answer a question or to produce a book or papers, when ordered so to do by the commission, or a commissioner, or to subscribe and swear to his deposition after it has been correctly reduced to writing, he shall be guilty of a misdemeanor and may be prosecuted therefor in any court of competent criminal jurisdiction.

If a person in attendance before a commission or a commissioner refuses without reasonable cause to be examined or to answer a legal and pertinent question or produce a book or paper, when ordered so to do by a commission or a commissioner, the commission may apply to any justice of the supreme court upon proof by affidavit of the facts for an order returnable in not less than two nor more than five days directing such person to show cause before the justice who made the order, or any other justice of the supreme court, why he should not be committed to jail; upon the return of such order the justice before whom the matter shall come on for hearing shall examine under oath such person whose testimony may be relevant, and such person shall be given an opportunity to be heard; and if the justice shall determine that such person has refused without reasonable cause or legal excuse to be examined, or to answer a legal and pertinent question, or to produce a book or paper which he was ordered to bring, he may forthwith, by warrant, commit the offender to jail, there to remain until he submits to do the act which he was so required to do or is discharged according to law.

Section 20. *Practice before the commissions; immunity of witnesses.*—All hearings before a commission or a commissioner, shall be governed by rules to be adopted and prescribed by the commission. And in all investigations, inquiries or hearings the commission, or a commissioner, shall not be bound by the technical rules of evidence. No person shall be excused from testifying or from producing any books or papers in any investigation or inquiry by or upon any hearing before a commission or any commissioner when ordered to do so by the commission, upon the ground that the testimony or evidence, books or documents required of him may tend to incriminate him or subject him to penalty or forfeiture, but no person shall be

prosecuted, punished or subjected to any penalty or forfeiture for or on account of any act, transaction, matter or thing concerning which he shall under oath have testified or produced documentary evidence; provided, however, that no person so testifying shall be exempt from prosecution or punishment for any perjury committed by him in his testimony. Nothing herein contained is intended to give, or shall be construed as in any manner giving unto any corporation immunity of any kind.

Section 21. *Court proceedings; preferences.*—All actions and proceedings under this act, and all actions and proceedings commenced or prosecuted by order of either commission, and all actions and proceedings to which either commission or the people of the state of New York may be parties, and in which any question arises under this act or under the railroad law, or under or concerning any order or action of the commission, shall be preferred over all other civil causes except election causes in all courts of the state of New York and shall be heard and determined in preference to all other civil business pending therein excepting election causes, irrespective of position on the calendar. The same preference shall be granted upon application of counsel to the commission in any action or proceeding in which he may be allowed to intervene.

Section 22. *Rehearing before commission.*—After an order has been made by a commission, any party interested therein may apply for a rehearing in respect to any matter determined therein, and the commission may grant and hold such a rehearing if in its judgment sufficient reason therefor be made to appear; if a rehearing shall be granted, the same shall be determined by the commission within thirty days after the same shall be finally submitted. An application for such a rehearing shall not excuse any common carrier, railroad corporation or street railroad corporation from complying with or obeying any order or any requirement of any order of the commission, or operate in any manner to stay or postpone the enforcement thereof except as the commission may by order direct. If, after such rehearing and a consideration of the facts, including those arising since the making of the order, the commission shall be of opinion that the original order or any part thereof is in any respect unjust or unwarranted, the commission may abrogate, change or modify the same. An order made after any such rehearing abrogating, changing or modifying the original order shall have the same force and effect as an original order but shall not affect any right or the enforcement of any right arising from or by virtue of the original order.

Section 23. *Service and effect of orders.*—Every order of a commission shall be served upon every person or corporation to be affected thereby, either by personal delivery of a certified copy thereof, or by mailing a certified copy thereof, in a sealed package with postage prepaid, to the person to be affected thereby or, in the case of a corporation, to any officer or agent thereof upon whom a summons may be served in accordance with the provisions of the code of civil procedure. It shall be the duty of every person and corporation to notify the commission forthwith, in writing, of the receipt of the certified copy of every order so served, and in the case of a corporation such notification must be signed and acknowledged by a person or officer duly authorized by the corporation to admit such service. Within a time specified in the order of the commission every person and corporation upon whom it is served must if so required in the order notify the commission in like manner whether the terms of the order are accepted and will be obeyed.

Every order of a commission shall take effect at a time therein specified and shall continue in force for a period therein designated unless earlier modified or abrogated by the commission or unless such order be unauthorized by this or any other act or be in violation of a provision of the constitution of the state or of the United States.

## ARTICLE II.

### PROVISIONS RELATING TO RAILROADS, STREET RAILROADS, AND COMMON CARRIERS.

Section 25. *Application of article.*—The provisions of this article shall apply to the transportation of passengers, freight or property, from one point to another within the state of New York, and to any common carrier performing such service.

Section 26. *Safe and adequate service; just and reasonable charges.*—Every corporation, person or common carrier performing a service designated in the preceding section, shall furnish, with respect thereto, such service and facilities as shall be safe and adequate and in all respects just and reasonable. All charges made or demanded by any such corporation, person or common carrier for the transportation of passengers, freight or property or for any service rendered or to be rendered in connection therewith, as defined in section two of this act, shall be just and reasonable and not more than allowed by law or by order of the commission having jurisdiction and made as authorized by this act. Every unjust or unreasonable charge made or demanded for any such service or transportation of passengers, freight or property or in connection therewith or in excess of that allowed by law or by order of the commission is prohibited.

Section 27. *Switch and side-track connections; powers of commissions.*—1. A railroad corporation, upon the application of any shipper tendering traffic for transportation, shall construct, maintain and operate upon reasonable terms a switch connection or connections with a lateral line of railroad or private sidetrack owned, operated or controlled by such shipper, and shall, upon the application of any shipper, provide upon its own property a side-track and switch connection with its line of railroad, whenever such side-track and switch connection is reasonably practicable, can be put in with safety and the business therefor is sufficient to justify the same.

2. If any railroad corporation shall fail to install or operate any such switch connection with a lateral line of railroad or any such side-track and switch connection as aforesaid, after written application therefor has been made to it, any corporation or person interested may present the facts to the commission having jurisdiction by written petition, and the commission shall investigate the matter stated in such petition, and give such hearing thereon as it may deem necessary or proper. If the commission be of opinion that it is safe and practicable to have a connection, substantially as prayed for, established or maintained, and that the business to be done thereon justifies the construction and maintenance thereof, it shall make an order directing the construction and establishment thereof, specifying the reasonable compensation to be paid for the construction, establishment and maintenance thereof, and may in like manner upon the application of the railroad corporation order the discontinuance of such switch connection.



**Section 28. Tariff schedules; publication.**—Every common carrier shall file with the commission having jurisdiction and shall print and keep open to public inspection schedules showing the rates, fares and charges for the transportation of passengers and property within the state between each point upon its route and all other points thereon; and between each point upon its route and all points upon every route leased, operated or controlled by it; and between each point on its route or upon any route leased, operated or controlled by it and all points upon the route of any other common carrier, whenever a through route and joint rate shall have been established or ordered between any two such points. If no joint rate over a through route has been established, the several carriers in such through route shall file, print and keep open to public inspection, as aforesaid, the separately established rates, fares and charges applied to the through transportation. The schedules printed as aforesaid shall plainly state the places between which property and passengers will be carried, and shall also contain the classification of passengers, freight or property in force, and shall also state separately all terminal charges, storage charges, icing charges, and all other charges which the commission may require to be stated, all privileges or facilities granted or allowed, and any rules or regulations which may in any wise change, affect or determine any part, or the aggregate of, such aforesaid rates, fares and charges, or the value of the service rendered to the passenger, shipper or consignee. Such schedules shall be plainly printed in large type; copies thereof for the use of the public shall be kept posted in two public and conspicuous places in every depot, station and office of every common carrier where passengers or property are received for transportation, in such manner as to be readily accessible to and conveniently inspected by the public. The form of every such schedule shall be prescribed by the commission and shall conform as nearly as possible to the form of schedule required by the interstate commerce commission under the act of congress, entitled, "An act to regulate commerce," approved Feb. 4, 1887, as amended by act approved June 29, 1906, and other amendments thereto. Where any similar schedule is required by law to be filed with both commissions they shall agree upon an identical form for such schedule. The commission shall have power, from time to time, in its discretion, to determine and prescribe by order such changes in the form of such schedules as may be found expedient.

**Section 29. Changes in schedule; notice required.**—Unless the commission otherwise orders no change shall be made in any rate, fare or charge, or joint rate, fare or charge, which shall have been filed and published by a common carrier in compliance with the requirements of this act, except after thirty days' notice to the commission and publication for thirty days as required by section twenty-eight of this act, which shall plainly state the changes proposed to be made in the schedule then in force, and the time when the change rate, fare or charge will go into effect; and all proposed changes shall be shown by printing, filing and publishing new schedules or shall be plainly indicated upon the schedules in force at the time and kept open to public inspection. The commission, for good cause shown, may allow changes in rates without requiring the thirty days' notice and publication herein provided for by duly filing and publishing in such manner as it may direct an order specifying the change so made and the time when it shall take effect; all such changes shall be immediately indicated upon its schedules by the common carrier.

**Section 30. Concurrence in joint tariffs; contracts, agreements or arrangements between any carriers.**—1. The names of the several carriers which are parties to any joint tariff shall be specified therein, and each of the parties thereto, other than the one filing the same, shall file with the commission such evidence of concurrence therein or acceptance thereof as may be required or approved by the commission; and where such evidence of concurrence or acceptance is filed, it shall not be necessary for the carriers filing the same also to file copies of the tariffs in which they are named as parties.

2. Every common carrier shall file with the commission sworn copies of every contract, agreement or arrangement with any other common carrier or common carriers relating in any way to the transportation of passengers, property or freight.

**Section 31. Unjust discrimination.**—No common carrier shall, directly or indirectly, by any special rate, rebate, drawback, or other device or method, charge, demand, collect or receive from any person or corporation a greater or less compensation for any service rendered or to be rendered in the transportation of passengers, freight or property, except as authorized in this act, than it charges, demands, collects or receives from any other person or corporation for doing a like and contemporaneous service in the transportation of a like kind of traffic under the same or substantially similarly circumstances and conditions.

**Section 32. Unreasonable preference.**—No common carrier shall make or give any undue or unreasonable preference or advantage to any person or corporation or to any locality or to any particular description of traffic in any respect whatsoever, or subject any particular person or corporation or locality or any particular description of traffic, to any prejudice or disadvantage in any respect whatsoever.

**Section 33. Transportation prohibited until publication of schedules; rates as fixed to be charged; passes prohibited.**—No common carrier subject to the provisions of this act shall after the first day of November, 1907, engage or participate in the transportation of passengers, freight or property, between points within the state, until its schedules of rates, fares and charges shall have been filed and published in accordance with the provisions of this act. No common carrier shall charge, demand, collect or receive a greater or less or different compensation for transportation of passengers, freight or property, or for any service in connection therewith, than the rates, fares and charges applicable to such transportation as specified in its schedules filed and in effect at the time; nor shall any such carrier refund or remit in any manner or by any device any portion of the rates, fares, or charges so specified, nor extend to any shipper or person any privileges or facilities in the transportation of passengers or property except such as are regularly and uniformly extended to all persons and corporations under like circumstances. No common carrier subject to the provisions of this act shall, directly or indirectly, issue or give any free ticket, free pass or free transportation for passengers or property between points within this state, except to its officers, employees, agents, pensioners, surgeons, phy-

sicians, attorneys-at-law, and their families; to ministers of religion, officers and employees of railroad young men's Christian associations, inmates of hospitals, charitable and eleemosynary institutions and persons exclusively engaged in charitable and eleemosynary work; and to indigent, destitute and homeless persons and to such persons when transported by charitable societies or hospitals, and the necessary agents employed in such transportation; to inmates of the national homes or state homes for disabled volunteer soldiers and of soldiers' and sailors' homes, including those about to enter and those returning home after discharge, and boards of managers of such homes; to necessary caretakers of property in transit; to employees of sleeping-car companies, express companies, telegraph and telephone companies doing business along the line of the issuing carrier; to railway mail service employees, postoffice inspectors, customs inspectors and immigration inspectors; to newsboys on trains, baggage agents, witnesses attending any legal investigation or proceeding in which the common carrier is interested, persons injured in accidents or wrecks and physicians and nurses attending such persons; to the carriage free or at reduced rates of persons or property for the United States, state or municipal governments, or of property to or from fairs and expositions for exhibit thereat. Nothing in this act shall be construed to prohibit the interchange of free or reduced transportation between common carriers of or for their officers, agents, employees, attorneys and surgeons and their families, nor to prohibit any common carrier from carrying passengers or property free, with the object of providing relief in cases of general epidemic, pestilence or other calamitous visitation; nor to prohibit any common carrier from transporting persons or property as incident to or connected with contracts for construction, operation or maintenance, and to the extent only that such free transportation is provided for in the contract for such work.

Provided further, that nothing in this act shall prevent the issuance of mileage, excursion, or commutation passenger tickets, or joint interchangeable mileage tickets, with special privileges as to the amount of free baggage that may be carried under mileage tickets of 1,000 miles or more. But before any common carrier, subject to the provision of this act, shall issue any such mileage, excursion, commutation passenger ticket or joint interchangeable mileage ticket, with special privileges as aforesaid, it shall file with the commission copies of the tariffs of rates, fares or charges on which such tickets are to be based, together with the specifications of the amount of free baggage permitted to be carried under such joint interchangeable mileage ticket, in the same manner as common carriers are required to do with regard to other rates by this act. Nor shall anything in this act prevent the issuance of passenger transportation in exchange for advertising space in newspapers at full rates.

**Section 34. False billing, etc., by carrier or shipper.**—No common carrier or any officer or agent thereof or any person acting for or employed by it, shall assist, suffer or permit any person or corporation to obtain transportation for any passenger, freight or property between points within this state at less than the rates then established and in force in accordance with the schedules filed and published in accordance with the provisions of this act, by means of false billing, false classification, false weight or weighing, or false report of weight, or by any other device or means. No person, corporation or any officer, agent or employee of a corporation, who shall deliver freight or property for transportation within the state to a common carrier, shall seek to obtain or obtain such transportation for such property at less than the rates then established and in force therefor, as aforesaid, by false billing, false or incorrect classification, false weight or weighing, false representation of the contents of a package, or false report or statement of weight, or by any other device or means, whether with or without the consent or connivance of the common carrier, or any of its officers, agents or employees.

**Section 35. Discrimination prohibited; connecting lines.**—Every common carrier is required to afford all reasonable, proper and equal facilities for the interchange of passenger, freight and property traffic between the lines owned, operated, controlled or leased by it and the lines of every other common carrier, and for the prompt transfer of passengers and for the prompt receipt and forwarding of freight and property to and from its said lines; and no common carrier shall in any manner discriminate in respect to rates, fares or charges or in respect to any service or in respect to any charges or facilities for any such transfer, receiving or forwarding between any two or more other common carriers or between passengers, freight or property destined to points upon the lines of any two or more other common carriers or in any respect with reference to passengers, freight or property transferred or received from any two or more other common carriers. This section shall not be construed to require a common carrier to permit or allow any other common carrier to use its tracks or terminal facilities. Every common carrier, as such, is required to receive from every other common carrier, at a connecting point, freight cars of proper standard, and haul the same through to destination, if the destination be upon a line owned, operated or controlled by such common carrier, or if the destination be upon a line of some other common carrier, to haul any car so delivered through to the connecting point upon the line owned, operated, controlled or leased by it, by way of route over which such car is billed, and there to deliver the same to the next connecting carrier. Nothing in this section shall be construed as in anywise limiting or modifying the duty of a common carrier to establish joint rates, fares and charges for the transportation of passengers, freight and property over the lines owned, operated, controlled and leased by it and the lines of other common carriers, nor as in any manner limiting or modifying the power of the commission to require the establishment of such joint rates, fares and charges. A railroad corporation and a street railroad corporation shall not be required to interchange cars except on such terms and conditions as the commission may direct.

**Section 36. Long and short haul.**—No common carrier, subject to the provisions of this act, shall charge or receive any greater compensation in the aggregate for the transportation of passengers or of a like kind of property, under substantially similar circumstances and conditions, for a shorter than for a longer distance over the same line in the same direction, the shorter being included within the longer distance; but this shall not be construed as authorizing any such common carrier to charge and receive as

great a compensation for a shorter as for a longer distance or haul. Upon application of a common carrier the commission may by order authorize it to charge less for longer than for shorter distances for the transportation of passengers or property in special cases after investigation by the commission, but the order must specify and prescribe the extent to which the common carrier making such application is relieved from the operation of this section, and only to the extent so specified and prescribed shall any common carrier be relieved from the operation and requirements of this section.

Section 37. *Distribution of cars.*—1. Every railroad corporation or other common carrier engaged in the transportation of freight shall, upon reasonable notice, furnish to all persons and corporations who may apply therefor, and offer freight for transportation, sufficient and suitable cars for the transportation of such freight in carload lots. Every railroad corporation and street railroad corporation shall have sufficient cars and motive power to meet all requirements for the transportation of passengers and property which may reasonably be anticipated, unless relieved therefrom by order of the commission. In case, at any particular time, a common carrier has not sufficient cars to meet all requirements for the transportation of property in carload lots, all cars available to it for such purposes shall be distributed among the several applicants therefor, without discrimination between shippers, localities or competitive or non-competitive points, but preference may always be given in the supply of cars for shipment of live stock or perishable property.

2. The commission shall have power to make, and by order shall make, reasonable regulations for the furnishing and distribution of freight cars to shippers, for the switching of the same, for the loading and unloading thereof, for demurrage charges in respect thereto, and for the weighing of cars and freight offered for shipment or transported by any common carrier.

Section 38. *Liability for damage to property in transit.*—Every common carrier and every railroad corporation and street railroad corporation shall, upon demand, issue either a receipt or bill of lading for all property delivered to it for transportation. No contract, stipulation or clause in any receipt or bill of lading shall exempt or be held to exempt any common carrier, railroad corporation or street railroad corporation from any liability for loss, damage or injury caused by it to freight or property from the time of its delivery for transportation until the same shall have been received at its destination and a reasonable time shall have elapsed after notice to consignee of such arrival to permit of the removal of such freight or property. Every common carrier, railroad corporation and street railroad corporation shall be liable for all loss, damage or injury to property caused by delay in transit due to negligence while the same is being carried by it, but in any action to recover for damages sustained by delay in transit the burden of proof shall be upon the defendant to show that such delay was not due to negligence. Every common carrier and railroad corporation shall be liable for loss, damage and injury to property carried as baggage up to the full value and regardless of the character thereof, but the value in excess of one hundred and fifty dollars shall be stated upon delivery to the carrier, and a written receipt stating the value shall be issued by the carrier, who may make a reasonable charge for the assumption of such liability in excess of one hundred and fifty dollars and for the carriage of baggage exceeding one hundred and fifty pounds in weight upon a single ticket. Nothing in this section shall deprive any holder of such receipt or bill of lading of any remedy or right of action which he has under existing law.

Section 39. *Continuous carriage.*—No common carrier shall enter into or become a party to any combination, contract, agreement or understanding, written or oral, express or implied, to prevent by any arrangement or by change of arrangement of time schedule, by carriage in different cars or by any other means or device whatsoever the carriage of freight and property from being continuous from the place of shipment to the place of destination. No breakage of bulk, stoppage or interruption of carriage made by any common carrier shall prevent the carriage of freight and property from being treated as one continuous carriage from the place of shipment to the place of destination. Nor shall any such breakage of bulk, stoppage or interruption of carriage be made or permitted by any common carrier except it be done in good faith for a necessary purpose without intention to avoid or unnecessarily interrupt or delay, the continuous carriage of such freight or property to evade any of the provisions of law, of this act or of an order of the commission.

Section 40. *Liability for loss or damage caused by violation of this act.*—In case a common carrier shall do, cause to be done or permit to be done any act, matter or thing prohibited, forbidden or declared to be unlawful, or shall omit to do any act, matter or thing required to be done, either by any law of the state of New York, by this act or by an order of the commission, such common carrier shall be liable to the persons or corporations affected thereby for all loss, damage or injury caused thereby or resulting therefrom, and in case of recovery, if the court shall find that such act or omission was wilful, it may in its discretion fix a reasonable counsel or attorney's fee, which fee shall be taxed and collected as part of the costs in the case. An action to recover for such loss, damage or injury may be brought in any court of competent jurisdiction by any such person or corporation.

#### ARTICLE III.

PROVISIONS RELATING TO THE POWERS OF THE COMMISSIONS IN RESPECT TO COMMON CARRIERS, RAILROADS AND STREET RAILROADS.

Section 45. *General powers and duties of commissions in respect to common carriers, railroads and street railroads.*—1. Each commission and each commissioner shall have power and authority to administer oaths, in all parts of the state, to witnesses summoned to testify in any inquiry, investigation, hearing or proceeding; and also to administer oaths in all parts of the state whenever the exercise of such power is incidentally necessary or proper to enable the commission or a commissioner to perform a duty or to exercise a power.

2. Each commission shall have the general supervision of all common carriers, railroads, street railroads, railroad corporations and street railroad corporations within its jurisdiction as hereinbefore defined, and shall have power to and shall examine the same and keep informed as to their general condition, their capitalization, their franchises and the manner in which their lines, owned, leased, controlled or operated, are managed, conducted and

operated, not only with respect to the adequacy, security and accommodation afforded by their service, but also with respect to their compliance with all provisions of law, orders of the commission and charter requirements.

3. Each commission and each commissioner shall have power to examine all books, contracts, records, documents and papers of any person or corporation subject to its supervision, and by subpoena duces tecum to compel production thereof. In lieu of requiring production of originals by subpoena duces tecum, the commission or any commissioner may require sworn copies of any such books, records, contracts, documents and papers or parts thereof to be filed with it.

4. Either commission shall conduct a hearing and take testimony as to the advisability of any proposed change of law relating to any common carrier, railroad corporation or street railroad corporation, if requested to do so by the legislature, by the senate or assembly committee on railroads, or by the governor, and may conduct such a hearing, when requested to do so, by any person or corporation, and shall report its conclusions to the officer, body, person or corporation at whose request the hearing was held. The commission may also recommend the enactment of such legislation, with respect to any matter within its jurisdiction, as it deems wise or necessary in the public interest, and may draft or cause to be drafted such bills or acts as it may deem necessary or proper to enact into law the legislation recommended by it.

Section 46. *Reports of common carriers, railroad corporations and street railroad corporations.*—Each commission shall prescribe the form of the annual reports required under this act to be made by common carriers, railroad and street railroad corporations, and may from time to time make such changes therein and additions thereto as it may deem proper; provided, however, that if any such changes or additions require any alteration in the method or form of keeping the accounts of such corporations, the commission shall give to them at least six months' notice before the expiration of any fiscal year of any such changes or additions, and on or before June thirtieth, in each year, shall furnish a blank form for such report. The contents of such report and the form thereof shall conform as near as may be to that required of common carriers under the provisions of the act of congress, entitled "An act to regulate commerce," approved February 4, 1887, and the act amendatory thereof approved June 29, 1906, and other amendments thereto. The commission may require such report to contain information in relation to rates or regulations concerning fares or freights, agreements or contracts affecting the same, so far as such rates or regulations pertain to transportation within the state. When the report of any such corporation is defective, or believed to be erroneous, the commission shall notify the corporation to amend the same within thirty days. The originals of the reports, subscribed and sworn to as prescribed by law, shall be prescribed in the office of the commission. The commission may also require such corporations to file monthly reports of earnings and expenses within a specified time. The commission may require of all such corporations specific answers to questions upon which the commission may need information. The annual report required to be filed by a common carrier, railroad or street railroad corporation shall be so filed on or before the thirtieth day of September in each year. The commission may extend the time for making and filing such report for a period not exceeding 60 days. If such corporation shall fail to make and file the annual report within the time above specified, or within the time as extended by the commission, or shall fail to make specific answer to any question, or shall fail to make the monthly reports when required by the commission as herein provided, within 30 days from the time when it is required to make and file any such report or answer, such corporation shall forfeit to the state the sum of one hundred dollars for each and every day it shall continue to be in default with respect to such report or answer. Such forfeiture shall be recovered in an action brought by the commission in the name of the people of the state of New York. The amount recovered in any such action shall be paid into the state treasury and credited to the general fund. Any railroad corporation operating a line partly within the second district and partly within the first district shall report to the commission for the second district; but the commission for the first district may, upon reasonable notice, require a special report from such railroad corporation. Any street railroad corporation operating a line partly within the first district and partly within the second district shall report to the commission of the first district; but the commission of the second district may, upon reasonable notice, require a special report from such street railroad corporation.

Section 47. *Investigation of accidents.*—Each commission shall investigate the cause of all accidents on any railroad or street railroad within its district which result in loss of life or injury to persons or property, and which in its judgment shall require investigation. Every common carrier, railroad corporation and street railroad corporation is hereby required to give immediate notice to the commission of every accident happening upon any line of railroad or street railroad owned, operated, controlled or leased by it, within the territory over which such commission has jurisdiction in such manner as the commission may direct. Such notice shall not be admitted as evidence or used for any purpose against such common carrier, railroad corporation or street railroad corporation giving such notice in any suit or action for damages growing out of any matter mentioned in said notice.

Section 48. *Investigations by commission.*—1. Each commission may, of its own motion, investigate or make inquiry, in a manner to be determined by it, as to any act or thing done or omitted to be done by any common carrier, railroad corporation or street railroad corporation, subject to its supervision, and the commission must make such inquiry in regard to any act or thing done or omitted to be done by any such common carrier, railroad corporation or street railroad corporation in violation of any provision of law or in violation of any order of the commission.

2. Complaints may be made to the proper commission by any person or corporation aggrieved by petition or complaint in writing setting forth any thing or act done or omitted to be done by any common carrier, railroad corporation or street railroad corporation in violation, or claimed to be in violation, of any provision of law or of the terms and conditions of its fran-



chise or charter or of any order of the commission. Upon the presentation of such a complaint the commission shall cause a copy thereof to be forwarded to the person or corporation complained of, accompanied by an order, directed to such person or corporation, requiring that the matters complained of be satisfied, or that the charges be answered in writing within a time to be specified by the commission. If the person or corporation complained of shall make reparation for any injury alleged and shall cease to commit, or to permit, the violation of law, franchise or order charged in the complaint, and shall notify the commission of that fact before the time allowed for answer, the commission need take no further action upon the charges. If, however, the charges contained in such petition be not thus satisfied, and it shall appear to the commission that there are reasonable grounds therefor, it shall investigate such charges in such manner and by such means as it shall deem proper, and take such action within its powers as the facts justify.

3. Whenever either commission shall investigate any matter complained of by any person or corporation aggrieved by any act or omission of a common carrier, railroad corporation or street railroad corporation under this section it shall be its duty to make and file an order either dismissing the petition or complaint or directing the common carrier, railroad corporation or street railroad corporation complained of to satisfy the cause of complaint in whole or to the extent which the commission may specify and require.

Section 49. *Rates and service to be fixed by the commission.*—Whenever either commission shall be of opinion, after a hearing, upon a complaint made as provided in this act, that the rates, fares or charges demanded, exacted, charged or collected by any common carrier, railroad corporation or street railroad corporation subject to its jurisdiction for the transportation of persons, freight or property within the state, or that the regulations or practices of such common carrier, railroad corporation or street railroad corporation affecting such rates are unjust, unreasonable, unjustly discriminatory or unduly preferential, or in anywise in violation of any provision of law, the commission shall determine the just and reasonable rates, fares and charges to be thereafter observed and in force as the maximum to be charged for the service to be performed, and shall fix the same by order to be served upon all common carriers, railroad corporations or street railroad corporations by whom such rates, fares and charges are thereafter to be observed. And whenever the commission shall be of opinion, after a hearing, had upon its own motion or upon complaint, that the regulations, practices, equipment, appliances, or service of any such common carrier, railroad corporation or street railroad corporation in respect to transportation of persons, freight or property within the state are unjust, unreasonable, unsafe, improper or inadequate, the commission shall determine the just, reasonable, safe, adequate and proper regulations, practices, equipment, appliances and service thereafter to be in force, to be observed and to be used in such transportation of persons, freight and property and so fix and prescribe the same by order to be served upon every common carrier, railroad corporation and street railroad corporation to be bound thereby; and thereafter it shall be the duty of every common carrier, railroad corporation and street railroad corporation to observe and obey each and every requirement of every such order so served upon it, and to do everything necessary or proper in order to secure absolute compliance with and observance of every such order by all its officers, agents and employees. The commission shall have power by order to require any two or more common carriers or railroad corporations whose lines, owned, operated, controlled or leased, form a continuous line of transportation or could be made to do so by the construction and maintenance of switch connection, to establish through routes and joint rates, fares and charges for the transportation of passengers, freight and property within the state as the commission may, by its order, designate; and in case such through routes and joint rates be not established by the common carriers or railroad corporations named in any such order, within the time therein specified the commission shall establish just and reasonable rates, fares and charges to be charged for such through transportation, and declare the portion thereof to which each common carrier or railroad corporation affected thereby shall be entitled and the manner in which the same shall be paid and secured.

Section 50. *Power of commissions to order repairs or changes.*—If, in the judgment of the commission having jurisdiction, repairs or improvements to or changes in any tracks, switches, terminals or terminal facilities, motive power, or any other property or device used by any common carrier, railroad corporation or street railroad corporation in or in connection with the transportation of passengers, freight or property ought reasonably to be made, or that any additions should reasonably be made thereto, in order to promote the security or convenience of the public or employees, or in order to secure adequate service or facilities for the transportation of passengers, freight or property, the commission shall, after a hearing either on its own motion or after complaint, make and serve an order directing such repairs, improvements, changes or additions to be made within a reasonable time and in a manner to be specified therein, and every common carrier, railroad corporation and street railroad corporation is hereby required and directed to make all repairs, improvements, changes and additions required of it by any order of the commission served upon it.

Section 51. *Power of commissions to order changes in time schedule; running of additional cars and trains.*—If, in the judgment of the commission having jurisdiction, any railroad corporation or street railroad corporation does not run trains enough or cars enough or possess or operate motive power enough, reasonably to accommodate the traffic, passenger and freight, transported by or offered for transportation to it, or does not run its trains or cars with sufficient frequency or at a reasonable or proper time having regard to safety, or does not run any train or trains, car or cars, upon a reasonable time schedule for the run, the commission shall, after a hearing either on its own motion or after complaint, have power to make an order directing any such railroad corporation or street railroad corporation to increase the number of its trains or of its cars or its motive power or to change the time for starting its trains or cars or to change the time schedule for the run of any train or car or make any other suitable order that the commission may determine reasonably necessary to accommodate and transport the traffic, passenger or freight, transported or offered for transportation.

Section 52. *Uniform system of accounts; access to accounts, etc.;*

*forfeitures.*—Each commission may, whenever it deems advisable, establish a uniform system of accounts to be used by railroad and street railroad corporations or other common carriers which are subject to its supervision, and may prescribe the manner in which such accounts shall be kept. It may also in its discretion prescribe the forms of accounts, records and memoranda to be kept by such corporation, including the accounts, records and memoranda of the movement of traffic as well as the receipts and expenditures of moneys. The system of accounts established by the commission and the forms of account, records and memoranda prescribed by it as provided above shall conform as near as may be to those from time to time established and prescribed by the interstate commerce commission under the provisions of the act of congress entitled "An act to regulate commerce" approved Feb. 4, 1887, as amended by the act approved June 29, 1906, and amendments thereto. The commission shall at all times have access to all accounts, records and memoranda kept by railroad and street railroad corporations and may prescribe the accounts in which particular outlays and receipts shall be entered, and may designate any of its officers or employees who shall thereupon have authority under the order of the commission to inspect and examine any and all accounts, records and memoranda kept by such corporations. Where the commission has prescribed the forms of accounts, records and memoranda to be kept by such corporations it shall be unlawful for them to keep any other accounts, records or memoranda than those so prescribed, or those prescribed by or under authority of the United States. Any employee or agent of the commission who divulges any fact or information which may come to his knowledge during the course of any such inspection or examination except in so far as he may be directed by the commission, or by a court or judge thereof, or authorized by law, shall be guilty of a misdemeanor.

Section 53. *Franchises and privileges.*—Without first having obtained the permission and approval of the proper commission no railroad corporation, street railroad corporation or common carrier shall begin the construction of a railroad or street railroad, or any extension thereof, for which prior to the time when this act becomes a law a certificate of public convenience and necessity shall not have been granted by the board of railroad commissioners or where prior to said time said corporation or common carrier shall not have become entitled by virtue of its compliance with the provisions of the railroad law to begin such construction; nor, except as above provided in this section, shall any such corporation or common carrier exercise any franchise or right under any provision of the railroad law, or of any other law, not heretofore lawfully exercised, without first having obtained the permission and approval of the proper commission. The commission within whose district such construction is to be made, or within whose district such franchise or right is to be exercised, shall have power to grant the permission and approval herein specified whenever it shall after due hearing determine that such construction or such exercise of the franchise or privilege is necessary or convenient for the public service. And if such construction is to be made, or such franchise to be exercised in both districts, the approval of both commissions shall be secured.

Section 54. *Transfer of franchises or stocks.*—No franchise nor any right to or under any franchise, to own or operate a railroad or street railroad shall be assigned, transferred or leased, nor shall any contract or agreement with reference to or affecting any such franchise or right be valid or of any force or effect whatsoever, unless the assignment, transfer, lease, contract or agreement shall have been approved by the proper commission. The permission and approval of the commission, to the exercise of a franchise under section fifty-three, or to the assignment, transfer or lease of a franchise under this section shall not be construed to revive or validate any lapsed or invalid franchise, or to enlarge or add to the powers and privileges contained in the grant of any franchise, or to waive any forfeiture.

No railroad corporation, or street railroad corporation, domestic or foreign, shall hereafter purchase or acquire, take or hold, any part of the capital stock of any railroad corporation or street railroad corporation or other common carrier organized or existing under or by virtue of the laws of this state, unless authorized so to do by the commission empowered by this act to give such consent; and save where stock shall be transferred or held for the purpose of collateral security only with the consent of the commission empowered by this act to give such consent, no stock corporation of any description, domestic or foreign, other than a railroad corporation or street railroad corporation, shall purchase or acquire, take or hold, more than ten per centum of the total capital stock issued by any railroad corporation or street railroad corporation or other common carrier organized or existing under or by virtue of the laws of this state. Nothing herein contained shall be construed to prevent the holding of stock heretofore lawfully acquired. Every contract, assignment, transfer or agreement for transfer of any stock by or through any person or corporation to any corporation, in violation of any provision of this act, shall be void and of no effect, and no such transfer or assignment shall be made upon the books of any such railroad corporation or street railroad corporation, or shall be recognized as effective for any purpose. The power conferred by this section to approve or disapprove a transaction relating to franchises, rights or stock of any railroad corporation or street railroad corporation, or other common carrier, shall be exercised by the commission which is authorized by this act to approve the issue of stock by such railroad corporation or street railroad corporation.

Section 55. *Approval of issues of stock, bonds and other forms of indebtedness.*—A common carrier, railroad corporation or street railroad corporation organized or existing, or hereafter incorporated, under or by virtue of the laws of the state of New York, may issue stocks, bonds, notes or other evidence of indebtedness payable at periods of more than twelve months after the date thereof, when necessary for the acquisition of property, the construction, completion, extension or improvement of its facilities, or for the improvement or maintenance of its service or for the discharge or lawful refunding of its obligations, provided and not otherwise that there shall have been secured from the proper commission an order authorizing such issue, and the amount thereof and stating that, in the opinion of the commission, the use of the capital to be secured by the issue

of such stock, bonds, notes or other evidence of indebtedness is reasonably required for the said purposes of the corporation, but this provision shall not apply to any lawful issue of stock, to the lawful execution and delivery of any mortgage or to the lawful issue of bonds thereunder, which shall have been duly approved by the board of railroad commissioners before the time when this act becomes a law. For the purpose of enabling it to determine whether it should issue such an order, the commission shall make such inquiry or investigation, hold such hearings and examine such witnesses, books, papers, documents or contracts as it may deem of importance in enabling it to reach a determination. Such common carrier, railroad corporation or street railroad corporation may issue notes, for proper corporate purposes and not in violation of any provision of this or any other act, payable at periods of not more than twelve months without such consent, but no such notes shall, in whole or in part, directly or indirectly be refunded by any issue of stock or bonds or by any evidence of indebtedness running for more than twelve months without the consent of the proper commission. Provided, however, that the commission shall have no power to authorize the capitalization of any franchise to be a corporation or to authorize the capitalization of any franchise or the right to own, operate or enjoy any franchise whatsoever in excess of the amount (exclusive of any tax or annual charge) actually paid to the state or to a political subdivision thereof as the consideration for the grant of such franchise or right; nor shall the capital stock of a corporation formed by the merger or consolidation of two or more other corporations, exceed the sum of the capital stock of the corporations so consolidated, at the par value thereof, or such sum and any additional sum actually paid in cash; nor shall any contract for consolidation or lease be capitalized in the stock of any corporation whatever; nor shall any corporation hereafter issue any bonds against or as a lien upon any contract for consolidation or merger. Whenever it shall happen that any railroad corporation shall own or operate its lines in both districts it shall, under this section, apply to the commission of the second district. Whenever it shall happen that any street railroad corporation shall own or operate its lines in both districts, it shall, under this section, apply to the commission of the first district. Any other common carrier not operating exclusively in the first district shall apply to the commission of the second district.

Section 56. *Forfeiture; penalties.*—1. Every common carrier, railroad corporation and street railroad corporation and all officers, and agents of any common carrier, railroad corporation or street railroad corporation shall obey, observe and comply with every order made by the commission, under authority of this act, so long as the same shall be and remain in force. Any common carrier, railroad corporation or street railroad corporation which shall violate any provision of this act, or which fails, omits or neglects to obey, observe or comply with any order or any direction or requirement of the commission, shall forfeit to the people of the state of New York not to exceed the sum of five thousand dollars for each and every offense; every violation of any such order or direction or requirement, or of this act, shall be a separate and distinct offense, and, in case of a continuing violation, every day's continuance thereof shall be and be deemed to be a separate and distinct offense.

2. Every officer and agent of any such common carrier or corporation who shall violate, or who procures, aids or abets any violation by any such common carrier or corporation of, any provision of this act, or who shall fail to obey, observe and comply with any order of the commission or any provision of an order of the commission, or who procures, aids or abets any such common carrier or corporation in its failure to obey, observe and comply with any such order or provision, shall be guilty of a misdemeanor.

Section 57. *Summary proceedings.*—Whenever either commission shall be of opinion that a common carrier, railroad corporation or street railroad corporation subject to its supervision is failing or omitting or about to fail or omit to do anything required of it by law or by order of the commission, or is doing anything or about to do anything or permitting anything or about to permit anything to be done, contrary to or in violation of law or of any order of the commission, it shall direct counsel to the commission to commence an action or proceeding in the supreme court of the state of New York in the name of the commission for the purpose of having such violations or threatened violations stopped and prevented either by mandamus or injunction. Counsel to the commission shall thereupon begin such action or proceeding by a petition to the supreme court alleging the violation complained of and praying for appropriate relief by way of mandamus or injunction. It shall thereupon be the duty of the court to specify the time, not exceeding twenty days after service of a copy of the petition, within which the common carrier, railroad corporation or street railroad corporation complained of must answer the petition. In case of default in answer or after answer, the court shall immediately inquire into the facts and circumstances in such manner as the court shall direct without other or formal pleadings, and without respect to any technical requirement. Such other persons or corporations as the court shall deem necessary or proper to join as parties in order to make its order, judgment or writs effective, may be joined as parties upon application of counsel to the commission. The final judgment in any such action or proceeding shall either dismiss the action or proceeding or direct that a writ of mandamus or an injunction or both issue as prayed for in the petition or in such modified or other form as the court may determine will afford appropriate relief.

Section 58. *Penalties for other than common carriers.*—1. Any corporation, other than a common carrier, railroad corporation or street railroad corporation, which shall violate any provision of this act, or shall fail to obey, observe and comply with every order made by the commission under authority of this act, so long as the same shall be and remain in force, shall forfeit to the people of the state of New York a sum not exceeding one thousand dollars for each and every offense; every such violation shall be a separate and distinct offense, and the penalty or forfeiture thereof shall be recovered in an action as provided in section fifty-nine of this act.

2. Every person who, either individually or acting as an officer or agent of a corporation other than a common carrier, railroad corporation or street railroad corporation, shall violate any provision of this act or fail to obey, observe or comply with any order made by the commission

under this act, so long as the same shall be or remain in force, or who shall procure, aid or abet any such corporation in its violation of this act or in its failure to obey, observe or comply with any such order, shall be guilty of a misdemeanor.

3. In construing and enforcing the provisions of this act relating to forfeitures and penalties the act of any director, officer or other person acting for or employed by any common carrier, railroad corporation, street railroad corporation or corporation, acting within the scope of his official duties or employment, shall be in every case and be deemed to be the act of such common carrier, railroad corporation, street railroad corporation or corporation.

Section 59. *Action to recover penalties or forfeitures.*—An action to recover a penalty or a forfeiture under this act may be brought in any court of competent jurisdiction in this state in the name of the people of the state of New York, and shall be commenced and prosecuted to final judgment by counsel to the commission. In any such action all penalties and forfeitures incurred up to the time of commencing the same may be sued for and recovered therein, and the commencement of an action to recover a penalty or forfeiture shall not be, or be held to be, a waiver of the right to recover any other penalty or forfeiture; if the defendant in such action shall prove that during any portion of the time for which it is sought to recover penalties or forfeitures for a violation of an order of the commission the defendant was actually and in good faith prosecuting a suit, action or proceeding in the courts to set aside such order, the court shall remit the penalties or forfeitures incurred during the pendency of such suit, action or proceeding. All moneys recovered in any such action, together with the costs thereof, shall be paid into the state treasury to the credit of the general fund.

Section 60. *Duties of commissions as to interstate traffic.*—Either commission may investigate freight rates on interstate traffic on railroads within the state, and when such rates are, in the opinion of either commission, excessive or discriminatory or are levied or laid in violation of the interstate commerce law, or in conflict with the rulings, orders or regulations of the interstate commerce commission, the commission may apply by petition to the interstate commerce commission for relief or may present to the interstate commerce commission all facts coming to its knowledge, as to violations of the rulings, orders, or regulations of that commission or as to violations of the interstate commerce law.

#### ARTICLE IV.

PROVISIONS RELATING TO GAS AND ELECTRICAL CORPORATIONS; REGULATION OF PRICE OF GAS AND ELECTRICITY.

Section 65. *Application of article.*—This article shall apply to the manufacture and furnishing of gas for light, heat or power and the furnishing of natural gas for light, heat or power, and the generation, furnishing and transmission of electricity for light, heat or power.

Section 66. *General powers of commissions in respect to gas and electricity.*—Each commission shall within its jurisdiction:

1. Have the general supervision of all persons and corporations having authority under any general or special law or under any charter or franchise to lay down, erect or maintain wires, pipes, conduits, ducts or other fixtures in, over or under the streets, highways and public places of any municipality, for the purpose of furnishing or distributing gas or of furnishing or transmitting electricity for light, heat or power, or maintaining underground conduits or ducts for electrical conductors.

2. Investigate and ascertain, from time to time, the quality of gas supplied by persons, corporations and municipalities; examine the methods employed by such persons, corporations and municipalities in manufacturing and supplying gas or electricity for light, heat or power and in transmitting the same, and have power to order such improvements as will best promote the public interest, preserve the public health and protect those using such gas or electricity and those employed in the manufacture and distribution thereof, or in the maintenance and operation of the works, wires, poles, lines, conduits, ducts and systems maintained in connection therewith.

3. Have power to fix the standard of illuminating power and purity of gas, not less than that prescribed by law, to be manufactured or sold by persons, corporations or municipalities for lighting, heating or power purposes, and to prescribe methods of regulation of the electric supply system as to the use for incandescent lighting and fix the initial efficiency of incandescent lamps furnished by the persons, corporations or municipalities generating and selling electric current for lighting, and by order to require the gas so manufactured or sold to equal the standard so fixed by it, and to establish the regulations as to pressure at which gas shall be delivered. For the purpose of determining whether the gas sold by such persons, corporations or municipalities for lighting, heating or power purposes conforms to the standard of illuminating power and purity and, of its own motion, examine and investigate the methods employed in manufacturing, delivering and supplying the gas so sold, and shall have access through its members or persons employed and authorized by it to make such examinations and investigations to all parts of the manufacturing plants owned, used or operated for the manufacture or distribution of gas by any such person, corporation or municipality. Any employee or agent of the commission who divulges any fact or information which may come to his knowledge during the course of any such inspection or examination, except in so far as he may be directed by the commission, or by a court or judge thereof, or authorized by law, shall be guilty of a misdemeanor.

4. Have power, in its discretion, to prescribe uniform methods of keeping accounts, records and books, to be observed by the persons, corporations and municipalities engaged in the manufacture, sale and distribution of gas and electricity for light, heat or power.

5. Examine all persons, corporations and municipalities under its supervision, keep informed as to the methods employed by them in the transaction of their business and see that their property is maintained and operated for the security and accommodation of the public and in compliance with the provisions of law and of their franchises and charters.

6. Require every person and corporation under its supervision to submit to it an annual report, verified by the oath of the president, treasurer, or general manager thereof, showing in detail (1) the amount of its authorized capital stock and the amount thereof issued and outstanding; (2) the amount



of its authorized bonded indebtedness and the amount of its bonds and other forms of evidence of indebtedness issued and outstanding; (3) its receipts and expenditures during the preceding year; (4) the amount paid as dividends upon its stock and as interest upon its bonds; (5) the name of, and the amount paid as salary to each officer and the amount paid as wages to its employees; (6) the location of its plant or plants and system, with a full description of its property and franchises, stating in detail how each franchise stated to be owned was acquired, and (7) such other facts pertaining to the operation and maintenance of the plant and system, and the affairs of such person or corporation as may be required by the commission. Such reports shall be in the form, cover the period and be submitted at the time prescribed by the commission. The commission may, from time to time, make changes and additions in such forms, giving to the persons, corporations and municipalities six months' notice before the time fixed by the commission as the expiration of the fiscal year of any changes or additions which would require any alteration in the method or form of keeping their accounts for the ensuing year. When any such report is defective or believed to be erroneous, the commission shall notify the person, corporation or municipality making such report to amend the same within thirty days. Any such person or corporation or municipality which shall neglect to make any such report within the time specified by the commission, or which shall fail to correct any such report within thirty days after notice, shall be liable to a penalty of \$100 and an additional penalty of \$100 for each day after the prescribed time for which it shall neglect to file or correct the same, to be sued for in the name of the people of the state of New York. The amount recovered in any such action shall be paid into the state treasury and be credited to the general fund. The commission may extend the time herein limited for cause shown.

7. Require each municipality engaged in operating any works or systems for the manufacture and supplying of gas or electricity to make an annual report to the commission, verified by the oath of the general manager or superintendent thereof, showing in detail, (1) the amount of its authorized bonded indebtedness and the amount of its bonds and other forms of evidence of indebtedness issued and outstanding for lighting purposes, (2) its receipts and expenditures during the preceding year, (3) the amount paid as interest upon its bonds and upon other forms of evidence of indebtedness, (4) the name of and the amount paid to each person receiving a yearly or monthly salary, and the amount paid as wages to employees, (5) the location of its plant and system with a full description of the property, and (6) such other facts pertaining to the operation and maintenance of the plant and system, as may be required by the commission. Such report shall be in the form, cover the period and be submitted at the time prescribed by the commission.

8. Have power, either through its members or inspectors or employees duly authorized by it, to enter in or upon and to inspect the property, buildings, plants, factories, power houses and offices of any of such corporations, persons or municipalities.

9. Have power to examine the books and affairs of any such corporation, persons or municipalities, and to compel the production before it of books and papers pertaining to the affairs being investigated by it.

10. Have power, either as a commission or through its members to subpoena witnesses, take testimony and administer oaths to witnesses in any proceeding or examination instituted before it, or conducted by it in reference to any matter within its jurisdiction under this article.

Section 67. *Inspection of gas and electric meters.*—1. Each commission shall appoint inspectors of gas and electric meters whose duty it shall be when required, to inspect, examine, prove and ascertain the accuracy of any and all gas meters used or intended to be used for measuring or ascertaining the quantity of illuminating or fuel gas or natural gas furnished by any gas corporation to or for the use of any person and any and all electric meters used or intended to be used for measuring and ascertaining the quantity of electric current furnished for light, heat and power by any electrical corporation to or for the use of any person or persons and when found to be or made to be correct, the inspector shall stamp or mark all such meters and each of them with some suitable device, which device shall be recorded in the office of the secretary of state.

2. No corporation or person shall furnish or put in use any gas meter which shall not have been inspected, proved and sealed, or any electric meter which shall not have been inspected, approved, stamped or marked by an inspector of the commission. Every gas and electrical corporation shall provide or keep in and upon its premises a suitable and proper apparatus to be approved and stamped or marked by the commission, for testing and proving the accuracy of gas and electric meters furnished for use by it, and by which apparatus every meter may and shall be tested, on the written request of the consumer to whom the same shall be furnished, and in his presence if he desires it.

If any consumer to whom a meter has been furnished, shall request the commission in writing to inspect such meter, the commission shall have the same inspected and tested; if the same on being so tested shall be found to be four per cent. if an electric meter, or two per cent. if a gas meter, defective or incorrect to the prejudice of the consumer, the inspector shall order the gas or electrical corporation forthwith to remove the same and to place instead thereof a correct meter, and the expense of such inspection and test shall be borne by the corporation; if the same on being so tested shall be found to be correct the expense of such inspection and test shall be borne by the consumer. A uniform reasonable charge shall be fixed by the commission for this service.

Section 68. *Approval of incorporation and franchises; certificate.*—No gas corporation or electrical corporation incorporated under the laws of this or any other state shall begin construction, or exercise any right or privilege under any franchise hereafter granted, or under any franchise heretofore granted but not heretofore actually exercised without first having obtained the permission and approval of the proper commission. Before such certificate shall be issued a certified copy of the charter of such corporation shall be filed in the office of the commission, together with a verified statement of the president and secretary of the corporation, showing that it has received the required consent of the proper municipal authorities. No munici-

pality shall build, maintain and operate for other than municipal purposes any works or systems for the manufacture and supplying of gas or electricity for lighting purposes without a certificate of authority granted by the commission. If the certificate of authority is refused, no further proceedings shall be taken before the commission, but a new application may be made thereafter after one year from the date of such refusal.

Section 69. *Approval of issues of stock, bonds and other forms of indebtedness.*—A gas corporation or electrical corporation organized or existing, or hereafter incorporated, under or by virtue of the laws of the state of New York, may issue stocks, bonds, notes or other evidence of indebtedness payable at periods of more than twelve months after the date thereof, when necessary for the acquisition of property, the construction, completion, extension or improvement of its plant or distributing system, or for the improvement or maintenance of its service or for the discharge or lawful refunding of its obligations, provided and not otherwise that there shall have been secured from the proper commission an order authorizing such issue, and the amount thereof, and stating that, in the opinion of the commission, the use of the capital to be secured by the issue of such stock, bonds, notes or other evidences of indebtedness is reasonably required for the said purposes of the corporation. For the purpose of enabling it to determine whether or not it should issue such an order, the commission shall make such inquiry or investigation, hold such hearings and examine such witnesses, books, papers, documents or contracts as it may deem of importance in enabling it to reach a determination. Such gas corporation or electrical corporation may issue notes, for proper corporate purposes and not in violation of any provision of this or any other act, payable at periods of not more than twelve months without such consent; but no such notes shall, in whole or in part, directly or indirectly be refunded by any issue of stock or bonds or by any evidence of indebtedness running for more than twelve months without the consent of the proper commission. Provided, however, that the commission shall have no power to authorize the capitalization of any franchise to be a corporation or to authorize the capitalization of any franchise or the right to own, operate or enjoy any franchise whatsoever in excess of the amount (exclusive of any tax or annual charge) actually paid to the state or to any political subdivision thereof as the consideration for the grant of such franchise or right. Nor shall the capital stock of a corporation formed by the merger or consolidation of two or more other corporations, exceed the sum of the capital stock of the corporations, so consolidated, at the par value thereof, or such sum and any additional sum actually paid in cash; nor shall any contract for consolidation or lease be capitalized in the stock of any corporation whatever; nor shall any corporation hereafter issue any bonds against or as a lien upon any contract for consolidation or merger.

Section 70. *Approval of transfer of franchise.*—No gas corporation or electrical corporation shall transfer or lease its franchise, works or system or any part of such franchise, works or system to any other person or corporation or contract for the operation of its works and system, without the written consent of the proper commission. The permission and approval of the commission, to the exercise of a franchise under section sixty-eight of this act, or to the assignment, transfer or lease of a franchise under this section shall not be construed to revive or validate any lapsed or invalid franchise or to enlarge or add to the powers and privileges contained in the grant of any franchise or to waive any forfeiture. No such corporation shall directly or indirectly acquire the stock or bonds of any other corporation incorporated for, or engaged in, the same or a similar business, or proposing to operate or operating under a franchise from the same or any other municipality, unless authorized so to do by the commission. Save where stock shall be transferred or held for the purpose of collateral security only with the consent of the commission empowered by this act to give such consent, no stock corporation of any description, domestic or foreign, other than a gas or electrical corporation, shall purchase or acquire, take or hold, more than ten per centum of the total capital stock issued by any gas corporation or electrical corporation organized or existing under or by virtue of the laws of this state. Nothing herein contained shall be construed to prevent the holding of stock heretofore lawfully acquired. Every contract, assignment, transfer or agreement for transfer of any stock by or through any person or corporation to any corporation, in violation of any provision of this act, shall be void and of no effect, and no such transfer or assignment shall be made upon the books of any such gas corporation, or electrical corporation, or shall be recognized as effective for any purpose.

Section 71. *Complaints as to quality and price of gas and electricity; investigation by commission; forms of complaints.*—Upon the complaint in writing of the mayor of a city, the trustees of a village or the town board of a town in which a person or corporation is authorized to manufacture, sell or supply gas or electricity for heat, light or power, or upon the complaint in writing of not less than 100 customers or purchasers of such gas or electricity in cities of the first or second class, or of not less than 50 in cities of the third class, or of not less than 25 elsewhere, either as to the illuminating power, purity, pressure or price of gas or the initial efficiency of the electric incandescent lamp supply, or the regulation of the voltage of the supply system used for incandescent lighting, or price of electricity sold and delivered in such municipality, the proper commission shall investigate as to the cause for such complaint. When such complaint is made, the commission may, by its agents, examiners and inspectors, inspect the works, system, plant and methods used by such person or corporation in manufacturing, transmitting and supplying of such gas or electricity, and may examine or cause to be examined the books and papers of such person or corporation pertaining to the manufacture, sale, transmitting and supplying of such gas or electricity. The form and contents of complaints made as provided in this section shall be prescribed by the commission. Such complaints shall be signed by the officers, or by the customers, purchasers or subscribers making them, who must add to their signatures their places of residence, by street and number, if any.

Section 72. *Notice and hearing; order fixing price of gas or electricity, or requiring improvement.*—Before proceeding under a complaint presented as provided in section seventy-one, the commission shall cause notice of such

complaint, and the purpose thereof, to be served upon the person or corporation affected thereby. Such person or corporation shall have an opportunity to be heard in respect to the matters complained of at a time and place to be specified in such notice. If an investigation be instituted upon motion of the commission the person or corporation affected by the investigation may be permitted to appear before the commission at a time and place specified in the notice and answer all charges which may be preferred by the commission. After a hearing and after such investigation as may have been made by the commission or its officers, agents, examiners or inspectors, the commission within lawful limits may, by order, fix the maximum price of gas or electricity to be charged by such corporation or person, or may order such improvement in the manufacture or supply of such gas, in the manufacture, transmission or supply of such electricity, or in the methods employed by such person or corporation, as will in its judgment improve the service. The price so fixed by the commission shall be the maximum price to be charged by such person or corporation for gas or electricity in such municipality until the commission shall upon complaint as provided in this section or upon an investigation conducted by it on its own motion, again fix the maximum price of such gas or electricity. In determining the price to be charged for gas or electricity the commission may consider all facts which in its judgment have any bearing upon a proper determination of the question although not set forth in the complaint and not within the allegations contained therein.

Section 73. *Forfeiture for noncompliance with order.*—Every gas corporation and electrical corporation and the officers, agents or employees thereof shall obey, observe and comply with every order made by the commission under authority of this act, so long as the same shall be and remain in force. Any such corporation, or any officer, agent or employee thereof, who knowingly fails or neglects to obey or comply with such order, or any provision of this act, shall forfeit to the state of New York not to exceed the sum of one thousand dollars for each offense. Every distinct violation of any such order or of this act, shall be a separate offense, and in case of a continuing violation each day shall be deemed a separate offense. An action to recover such forfeiture may be brought in any court of competent jurisdiction in this state in the name of the people of the state of New York, and shall be commenced and prosecuted to final judgment by counsel to the commission. In any such action all penalties and forfeitures incurred up to the time of commencing the same may be sued for and recovered therein, and the commencement of an action to recover a penalty or forfeiture shall not be, or be held to be, a waiver of the right to recover any other penalty or forfeiture; if the defendant in such action shall prove that during any portion of the time for which it is sought to recover penalties or forfeitures for a violation of an order of the commission the defendant was actually and in good faith prosecuting the suit, action or proceeding in the courts to set aside such order, the court shall remit the penalties or forfeitures incurred during the pendency of such suit, action or proceeding. All moneys recovered in any such action, together with the costs thereof, shall be paid into the state treasury to the credit of the general fund.

Section 74. *Summary proceedings.*—Whenever either commission shall be of opinion that a gas corporation, electrical corporation or municipality within its jurisdiction is failing or omitting or about to fail or omit to do anything required of it by law or by order of the commission or is doing anything or about to do anything or permitting anything or about to permit anything to be done, contrary to or in violation of law or of any order of the commission, it shall direct counsel to the commission to commence an action or proceeding in the supreme court of the state of New York in the name of the commission for the purpose of having such violations or threatened violations stopped and prevented either by mandamus or injunction. Counsel to the commission shall thereupon begin such action or proceeding by a petition to the supreme court alleging the violation complained of and praying for appropriate relief by way of mandamus or injunction. It shall thereupon be the duty of the court to specify the time not exceeding twenty days after service of a copy of the petition within which the gas corporation, electrical corporation or municipality complained of must answer the petition. In case of default in answer or after answer, the court shall immediately inquire into the facts and circumstances in such manner as the court shall direct without other or former pleadings, and without respect to any technical requirement. Such other persons or corporations, as it shall seem to the court necessary or proper to join as parties in order to make its order, judgment or writs effective, may be joined as parties upon application of counsel to the commission. The final judgment in any such action or proceeding shall either dismiss the action or proceeding or direct that a writ of mandamus or an injunction or both issue as prayed for in the petition or in such modified or other form as the court may determine will afford appropriate relief.

Section 75. *Defense in case of excessive charges for gas or electricity.*—If it be alleged and established in an action brought in any court for the collection of any charge for gas or electricity, that a price has been demanded in excess of that fixed by the commission or by statute in the municipality wherein the action arose, no recovery shall be had therein, but the fact that such excessive charges have been made shall be a complete defense to such action.

Section 76. *Jurisdiction.*—Whenever any corporation supplies gas or electricity to consumers in both districts, any application or report to a commission required by this act shall be made to the commission of the district within which it is mainly supplying, or proposing to supply, such service to consumers. But nothing herein contained shall be construed to deprive the commission of either district of the power of supervision and regulation within its district. And either commission shall have power to enter and inspect the plant of such corporation, wherever situated.

Section 77. *Powers of local officers.*—If in any city of the first or second class there now exists or shall hereafter be created a board, body or officer having jurisdiction of matters pertaining to gas or electric service, such board, body or officer shall have and may exercise such power, jurisdiction and authority in enforcing the laws of the state and the orders, rules and regulations of the commission as may be prescribed by statute or by the commission.

## ARTICLE V.

## COMMISSIONS AND OFFICES ABOLISHED; SAVING CLAUSE; REPEAL.

Section 80. *Board of railroad commissioners abolished; effect thereof.*—On and after the taking effect of this act the board of railroad commissioners shall be abolished. All the powers and duties of such board conferred and imposed by any statute of this state shall thereupon be exercised and performed by the public service commissions.

Section 81. *Commission of gas and electricity abolished; effect thereof.*—On and after the taking effect of this act the commission of gas and electricity shall be abolished. All the powers and duties of such commission conferred and imposed by any statute of this state shall be exercised and performed by the public service commissions.

Section 82. *Inspector of gas meters abolished; effect thereof.*—On and after the taking effect of this act the offices of inspector and deputy inspectors of gas meters shall be abolished. All the powers and duties of such inspector conferred and imposed by any statute of this state shall be exercised and performed by the public service commissions. But any meter inspected, proved and sealed, by the said inspector of gas meters, prior to the taking effect of this act, shall be deemed to have been inspected by the commission.

Section 83. *Board of rapid transit railroad commissioners abolished; effect thereof.*—On and after the taking effect of this act the board of rapid transit railroad commissioners shall be abolished. All the powers and duties of such board conferred and imposed by any statute of this state shall thereupon be exercised and performed by the public service commission of the first district.

Section 84. *Transfer of records.*—1. The board of railroad commissioners, the commission of gas and electricity, and the inspector of gas meters, shall transfer and deliver to the public service commission of the second district all books, maps, papers and records of whatever description, now in their possession; and upon taking effect of this act, the said commission is authorized to take possession of all such books, maps, papers and records.

2. The board of rapid transit railroad commissioners shall transfer and deliver to the public service commission of the first district all contracts, books, maps, plans, papers and records of whatever description, now in their possession; and upon taking effect of this act, the said commission is authorized to take possession of all such contracts, books, maps, plans, papers and records. The said commission may also, at its pleasure, retain in its employment any person or persons now employed by the said board of rapid transit railroad commissioners, and all said persons shall be eligible for transfer and appointment to positions under the public service commission of the first district.

Section 85. *Pending actions and proceedings.*—This act shall not affect pending actions or proceedings, civil or criminal, brought by or against the board of railroad commissioners or the commission of gas and electricity, or the board of rapid transit railroad commissioners, but the same may be prosecuted or defended in the name of the public service commission, provided the subject-matter thereof is within the statutory jurisdiction of such commission. Any investigation, examination or proceeding undertaken, commenced or instituted by the said boards or commission or either of them prior to the taking effect of this act may be conducted and continued to a final determination by the proper public service commission in the same manner under the same terms and conditions, and with the same effect as though such boards or commissions had not been abolished.

Section 86. *Construction.*—Wherever the terms board of railroad commissioners, or commission of gas and electricity or inspector of gas meters or board of rapid transit railroad commissioners occur in any law, contract or document or whenever in any law, contract or document reference is made to such boards, commission or inspector, such terms or reference shall be deemed to refer to and include the public service commission as established by this act, so far as such law, contract or document pertains to matters which are within the jurisdiction of the said public service commissions. Nothing in this act contained shall be deemed to apply to or operate upon interstate or foreign commerce.

Section 87 repeals all existing laws in conflict with this bill; Section 88 appropriates \$300,000 for the commissions, one-half for each, and Section 89 provides that the act shall take effect July 1, 1907.

## Foreign Railroad Notes.

In Hungary the narrow-gage railroads are of 15 different gages, from 18 to 39½ in. The government has now decreed that henceforth such railroads may be built of only two gages, 70 and 76 centimeters = 27½ and 30 in.

The first task set for the new central office of the Prussian State railroads is a thorough examination of the rules and regulations for the different branches of the service, with a view to such a revision as will secure greater clearness and uniformity.

In the discussion of the railroad estimates by the Prussian Diet a champion of labor wished the government to agree to an advance in the salaries of locomotive engineers so that for the first year they may receive \$360, and to rise in time to a maximum of \$600 per year.

The coal production of the whole German Empire in 1906 was 249,000,000 short tons, 12 per cent. more than in 1905. About one-quarter of this was lignite. Of the whole, 92 per cent. was produced in Prussia. The imports were 20,200,000 and the exports 26,500,000 tons. Since 1901 the consumption of coal in Germany has increased 59,400,000 tons, or nearly one-third.



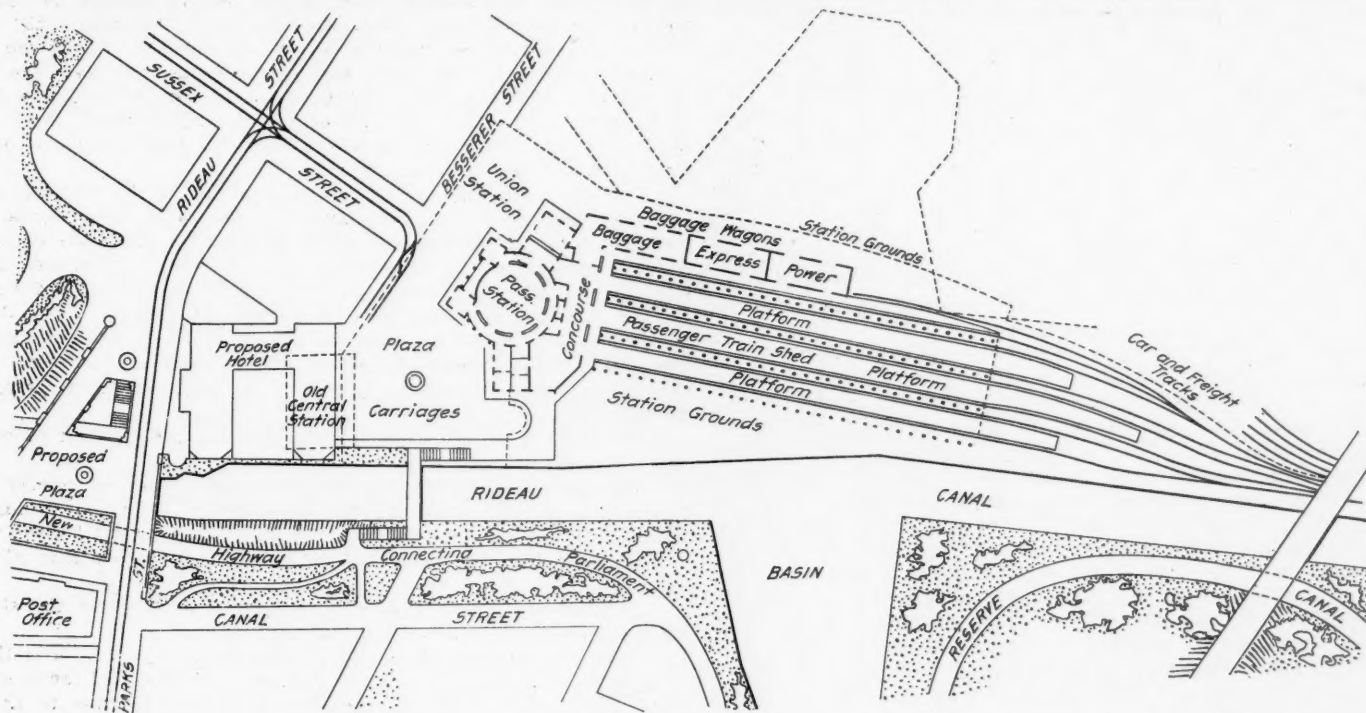
## Proposed Union Station at Ottawa.

Plans for a central passenger station and hotel for Ottawa, Ont., have been submitted to the City Council and await the action of that body. The proposed station is to cost about \$250,000, and the hotel, if built, between \$1,250,000 and \$1,500,000.

The general layout of the proposed station site and the main elevation of the station itself are shown in the accompanying drawings. The station is to face on a new plaza, containing about 32,000 sq. ft. of ground. There is to be a separate driveway at the other

side for coal and ashes. The entire area set aside for the proposed terminal covers about 266,000 sq. ft., or over six acres. The total length of the station will be 250 x 125 ft., exclusive of its concourse, which is 50 x 250 ft. The separate buildings for baggage, express, mail, and power, will cover 350 x 35 ft. All of this area is so arranged as to be increased in size as may be required.

The second story of the station building has separate stairway and elevator entrances, and will be used for railroad offices, covering about 14,000 sq. ft. The roofs are planned to carry snow and water away from the sidewalks and approaches. The construction



Proposed Lay Out of New Union Station and Grounds at Ottawa.

side for baggage and express wagons, so that they will not use the plaza. Passengers coming to or departing from the station can be distributed across the plaza to the north, east and west parts of the city.

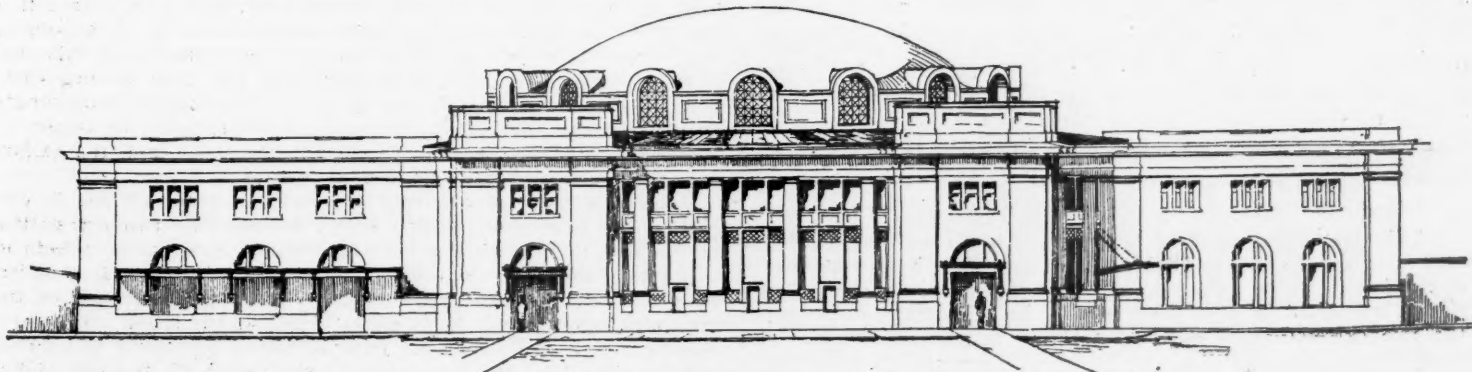
The station has been planned to provide for future needs for many years. It is to be used by the Grand Trunk, Canadian Pacific, Canadian Northern and New York Central (Ottawa & New York) roads. Each of the roads at present entering Ottawa can reach the new terminal by running around a Y and backing into the station. All trains will be backed into the trainsheds, thus keeping locomotive smoke as far away as possible. All switching, transferring of cars and changing of locomotives is to be done in the yards outside the station.

The station building proper consists of a main waiting room under a large central rotunda 85 ft. in diameter, open to the roof, lighted by clerestory windows, without skylights, and around the outside of this room will be wide passage ways to the ticket office, baggage rooms, waiting rooms, telephones, news stand, trainshed, concourse and exits and entrances, so that there will be no necessity of passing through the waiting room on the way to or from these different points. The ticket offices are to have a mezzanine floor above for clerks and for storing tickets. The waiting room and connecting corridors occupy about 5,600 sq. ft. The separate waiting rooms for women cover about 1,150 sq. ft., and the men's room about 700 sq. ft. The baggage rooms and custom rooms cover about 7,450 sq. ft., and the express and mail rooms 3,460 sq. ft. Besides this, there is to be a power and heating plant for the station, with sep-

arate track for coal and ashes. The entire area set aside for the proposed terminal covers about 266,000 sq. ft., or over six acres. The total length of the station will be 250 x 125 ft., exclusive of its concourse, which is 50 x 250 ft. The separate buildings for baggage, express, mail, and power, will cover 350 x 35 ft. All of this area is so arranged as to be increased in size as may be required.

The passenger trainshed will cover about 8,200 sq. ft., and will be 530 x 186 ft., including seven tracks and four platforms. The columns for the overhead trusses are so placed that they do not block the platform. The design consists of a series of arched trusses, 17 ft. high at the lowest point above the tracks, the entire construction being of steel and cement. Directly over the tracks, openings will be left for the escape of smoke and gas from the locomotives. The sheds will be designed particularly for Canadian winter weather. A series of automatically controlled trap doors along the roof of the train shed can be opened and the snow dropped on cars underneath whenever desired.

The passenger platforms will be lighted overhead with wire-glass skylights at the apex of the roof, where they cannot be covered by snow, and where condensation can be provided for. These platforms will be of cement, 20 ft. wide in the clear, and raised nearly to the height of the car steps. The main platforms for express trains are over 700 ft. long, with umbrella awnings extending out beyond the trainshed proper. The platforms for local trains



Front Elevation of Proposed Union Station at Ottawa.

are 600 ft. long. The space between the platforms will be drained toward the center, so that any oil from the cars or engines, together with any rain or snow coming through the smoke openings, will be carried away from the platforms and to drains outside of the building.

### Track Deformations and Their Prevention.\*†

BY G. CUENOT,

Government Engineer of Bridges and Highways, and connected with the Board of Control of the Paris, Lyons & Mediterranean Railway.

#### XII.

##### METHODS OF IMPROVING THE JOINT.

The obligation of obtaining a more rigid track, in view of realizing greater speeds, and also of reducing expenses of operation, is in contradiction to the well-known principle that a railroad track should be elastic, and should not present hard spots. It is necessary, in discussing this question, to define the word "elasticity," as employed in this case. Is an elastic track that which, under the effect of loads, returns each time to its original position? Or should elasticity be understood as a special quality, difficult to define, which produces smooth rolling; should the track be like a spring of great power, slowly registering the shocks and diminishing the effect so disastrous for vehicles and for travelers?

If the first sense is adopted, an elastic track is necessarily a bad track; it does not diminish the shocks, it multiplies them. For it is impossible that this elasticity should be at all points of like proportions; here the track, under the effect of the ballast, of the roadbed, and other causes, will be deformed more than at the neighboring point. Shocks and jolts, impossible to avoid, will result from it. Under existing conditions, with ties as they are laid, having small rigidity, it may be said that on each rail length there is first a drop, extending to the middle of the section; then a rise, from this point to the end of the rail. Both in the drop and in the rise there are high points and low points, which exaggerate the general bad effect. This is occasioned by the fact that the joint, in consequence of the drawing together of the ties at the splicing, which stiffens the rail, is the least elastic point of the track, and that in reality a hard point has been obtained when the contrary result was sought.

For, up to the present time, if we have used a suspended joint, it is because we have been afraid of having a hard point in its place; it has been surmised, wrongfully, that the supported joint was bad, and that it was necessary to keep it in the air in order to preserve that elasticity, which is only a deception. A track absolutely rigid as a marble table would be infinitely preferable for rolling to a track capable of deformation, like that which we actually have. This deformation—for the word "elasticity" is improper—is a necessity; it cannot be made otherwise, but it is not an advantage, any more than one could pretend that the elasticity of the bridge of Saints-Pères was sought for, and constitutes progress.

It has been forgotten that, on a track as actually constructed, hard points were not possible, because all the points of this track become deformed, and because, under the ties, the vertical displacement is greater than anywhere else. Mr. Couard has shown that the flexure of rail between two consecutive ties was comprised between one-tenth and one-twentieth of a millimeter, and that the lowering of a tie under a load can reach four millimeters (0.16 in.); the mean is two millimeters (0.08 in.), that is to say the flexure of the rail is comprised between 1/200 and 1/400 of the lowering of the tie, and can be considered as infinitely small in comparison with the latter. Otherwise put, the tie bends infinitely more than any other point of the track; it is therefore wrong to think that it can constitute a hard point.

The necessity for laying rails in short lengths, in order to leave play between them for expansion, should not allow this fact to be lost sight of, that the extremity of a rail is like any other point, and that it should not be otherwise treated. Now the two extremities of the rails which follow each other have a marked tendency to vibrate differently; and from this tendency a fall is created, which goes on increasing with time.

Not only is the splicing displaced, but the rail is curved under the effect of the fall and of the shock which follows. Mr. Couard has shown that the unequal level, between the middle of the rail and its extremities, can attain 0.8 in., divided thus:

Permanent bending between the middle and the extremity of the rail.	0.56 in.
Variable flexure	0.12 "
Compression of the ballast and of the subsoil.	0.12 "
Total	0.80 in.

This material inequality is due to the fall and to the shock, that is to say, to the suspended joint; it is the direct consequence of it. When laying rails an allowance of 0.02 in. at the extremities is admitted; if this allowance is in a contrary direction at the two extremities of adjacent rails, it is possible for the total

drop to amount to 0.04 in. This circumstance, which is frequently presented, is the cause for the permanent bending, which rises even to 0.56 in. The hammering of the rail at its extremities aggravates the original situation up to the limit indicated. It is the same as far as the variable flexure is concerned; an end of rail of about 11.81 in., since the ties of the even joint are spaced about 23.62 in., should not bend under the loads to which it is submitted by more than one-tenth of a millimeter. The variable bending which it takes, and which is 0.12 in., is solely due to the shock, and, consequently, to the suspended joint. It is possible then to reduce in an appreciable manner the unequal level of 0.67 in. by holding the joint and preventing it from vibrating. We will then have only the flexure of the tie, the compression of the roadbed, which can be reduced to 0.06 in. That is to say, by sustaining the joint the unequal level which is actually produced can be reduced to one-twelfth of its real value. This will not only make better track, since the shock will be lessened, but it will prolong the life of the rail, occasioning a material economy in renewals.

The disorganization of the splicing, which is the first effect of the play allowed at the extremities of the rails, their curvature and the shock which follows, can be avoided by fixing the ends on a very rigid tie. It is conceivable that the two extremities, fastened on a single piece would act jointly with that piece, and would not have the tendency to work separately, as actually takes place. It is naturally necessary that the tie be rigid in order to avoid the stress on the fastenings, but, under that reservation, the method which we have outlined, and which is very old, only presents advantages.

Mr. Couard, in his study on the vertical deformation of rails, makes the following comment:

"The principal attempts which have been made at reinforcing the splices of rails and the want of success of the oldest attempts, leaves little to be hoped for from the new, and I do not believe that it will be in this direction that the solution of the stability of the joint will be found.

"Experience proves that it is dangerous to suppress the allowance for expansion in railroad tracks.

"The unsymmetrical placing of ties in such a way that there is a greater number under the first half of the rail, appears to have given good results on the line from Saint-Etienne to Lyons, the busiest of the P. L. M. system.

"The reinforcement of the joint, by drawing together the ties of the even joint, has been well tried; several companies have also sought to bring the ties of the even joint still nearer together, in connection with the suspended joint."

This tendency to draw nearer and nearer together the ties of the even joint leads to the adoption of the supported joint; it is therefore not astonishing to find in the discussion at the Congress of 1895 at London the following declaration by Mr. John M. Toucey, of the New York Central:

"We have no more suspended joints since we tried them some years ago. We abandoned them because the inflection was too great. The joint is supported by three ties: one in the middle, the others at the extremities of the splices.

"With the rails of 100 lbs. per yard and this splice bearing on three ties, there is scarcely any sensible inflection at the joint. The rolling is almost as smooth in the middle of the rail as at the extremities. We believe, therefore, that our system of splicing is the best."

I concur in this rational conclusion. Mr. Couard also recognizes that this is good practice, and he has shown that if the supported joint has been rated as bad, it is because the tie at the joint, induced successively by the rail in advance and by the following-rail, oscillated and easily became untamped when adjacent ties were 31½ in. away. He has established, in fact, that in the tunnels of Blaisy-Bas and of Saint-Irénée, with spacing reduced to 23.62 in., and with 87-lb. rails, the supported joints behaved well, although the pivoting of the ties still existed.

I conclude, then, that the only practical method for improving the joint is to support it on a tie and to place two others 11.81 in. from it. Moreover, untamping will be much less to be feared if a rigid type of tie is adopted, which always rests on its appointed bed. Experiment will alone permit of pronouncing upon this subject; but it can be said that untamping will then be less easy, because the tie, resting on nearly a plane surface, will distribute the pressure on the ballast uniformly, while actually, by reason of the flexure, the pressure is distributed unequally, and the ballast deformed unequally, which produces unwedging.

But this measure will only be useful after we succeed in correcting the unevenness which exists between the two extremities of the rail, and which proceeds, on the one hand, from defects in manufacture, and, on the other, from defects in laying. It is understood that if the joint still presents, after establishment of the track, any unevenness, in whatever direction, the latter will become rapidly worse, the tie of the joint becoming unwedged and finishing by churning, which is actually the case with the even joint. The unevenness will increase, and the state of things will become

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†Authorized translation by W. C. Cushing, M.A., B.S., Chief Engineer of Maintenance of Way, Pennsylvania Lines West, Southwest System.



just what it is now. The first measure to be taken consists, then, in suppressing the existing unevenness; it is possible to accomplish this in two ways, either by placing wedges under the lowest part of the rail (but this would be difficult, for it is a question of some tenths of millimeters), or by planing the two extremities of the rail with a portable tool, which seems easy, in order to place the rolling surface at the same level on both sides of the joint.

Consolidation of the fastenings is indispensable to complete the good support of the joint. If it is indispensable to improve the joint, which is certainly the weakest point in the track, it is no less necessary to pay attention to the holding power of the fastenings. It has been seen how important they were, as much from the point of view of assuring the joint action between the rail and the tie as of the resistance opposed to lateral movement.

As far as concerns this resistance, it is proper to utilize the whole lower surface of the head of the screw spike, and, on that account, to adopt the tie plates, which diminish the effect of the cutting which the rail exercises on the body of the screw spike. Certain railroad companies, fearing this cutting, have kept its shank away from the edge of the base of the rail; this is a bad solution, for, if it serves to avoid one difficulty, it brings about another equally serious. Lateral displacement of the rail, since it is not well supported and its overturning on curves, or sliding, is not properly guarded against. Experiments made on the P. L. M. on this subject show that with a metallic plate the cutting is very much diminished; it is true that we must take care of the abnormal wear which is necessarily produced between two metallic surfaces, the lower part of the base and the upper surface of the plate. But it is possible to interpose between the two surfaces a plate of felt or poplar.

On this account the reinforcement of the plates actually in use on the P. L. M. was occasioned; it has been seen, in the first part of this study, that, for want of a suitable reinforcement, the screw spike is not sufficiently sustained, and that under the influence of a relatively weak push exercised on the rail, it has a tendency to be overturned, not being stopped by the plate. The reinforcement, which we have made practical, has, on the contrary, arrested the movement of overturning and diminished the chances for inclination of the rail, and, consequently, of the spreading of the track. One can object, and it is probably the reason for maintenance of the actual type, that the reinforcement of the plate can induce loosening from the base of the rail, the head of the screw spike continuing to be supported on the reinforced part of the plate, while no longer being applied to the base. It does not seem impossible to remedy this disadvantage; it suffices, in fact, to slide an iron wedge under the head of the screw spike, in the same manner that wedges are placed between the splice and the lower part of the head of the rail. The importance of the result to be obtained justifies the measure which should be taken.

#### EMPLOYMENT OF THE TREENAIL.

As a means of consolidation of the fastenings, above all of those which are used in ties already old, the treenail has been employed with success. The wooden treenail, Collet system, was at first put in service, then the metallic treenail, of which one of the best types is the one invented by Mr. Thiollier. We pointed out, in the first part of this study, the results which the Collet treenail gave. I think it proper to recall them in revision.

The resistance to excessive turning, which is an essential quality of the fastening, is:

For pine without treenail.....	132 lbs.
For pine with treenail.....	176 "
For hardwood, oak, or beech, without treenail.....	220 "
For hardwood, oak or beech, with treenail.....	242 "

The resistance to tearing out, which is about 11,023 lbs., in creosoted pine with the treenail, in place of 7,716 lbs., seems to decrease with time; for it decreases at the end of two years to 8,818 lbs., to a limit sensibly equal to that which the wood possesses in its natural state. That holds according to the manner even in which the treenail is made; the latter is, in fact, cut out of wood in the direction of the grain, and thoroughly creosoted. Now it is known that a piece of wood thus established is in bad condition for receiving spikes or screws; they both hold badly. The wood does not permit of penetration by a screw thread; this has been proved by experiment with the treenail. Thus, when the insertion is first made, the force of extraction is exercised on the treenail; at the end of a few months the combination of screw spike and treenail submitted to extraction acts otherwise, it is the screw spike which is withdrawn, under a force of about 7,716 lbs. It holds from this that the wood of the treenail has not received the imprint of the screw thread; it is simply compressed more or less strongly, which in the beginning assures the union of the two pieces. But at the end of a short time the effect of this compression diminishes, the wood shrinks little by little, the contact diminishes, and the force which is necessary for extracting the system diminishes.

The resistance to tearing out in new oak ties is about 13,228 lbs.; it is about 15,432 lbs. when the latter are provided with treenails. But there is equally produced a diminution of resistance with time,

as much in the first case as in the second, and the reason for it is the same.

As far as the resistance to overturning is concerned, the employment of the treenail does not appear to increase it materially; it depends above all, as has been seen, on the reinforcement of the plate.

The useful effect of the treenail is not, in fact, very great for opposing such a movement, because the upright wood of the treenail presents quite a weak resistance, scarcely the tenth of the resistance of the wood submitted to a force perpendicular with its fibers; because, under the influence of the force, the hole takes an oval shape, and because the wood crushes.

Another disadvantage in this method of consolidation of the fastenings arises from the fact that its employment requires the use of plates, in order to protect its upper surface. It is thus that the treenails of ties on tracks of the P. L. M. Co. are well preserved, because they are provided with a plate, but they shrink in the same ties without the plate, and a space between the treenail and the wood of the tie is produced, rendering the fastening bad and very shaky. This fact explains why, with certain companies where the plate is not in use, the wooden treenail could not be employed. It is possible, we believe, to remedy this disadvantage by placing on the head of the treenail a protecting coat composed of tar and sand, or of lime, sufficiently elastic to lend itself to all the movements of the tie.

It may therefore be said that, under actual conditions, the treenail prolongs the durability of a tie whose fastenings are damaged, but it does not give an increase of resistance, since the latter diminishes quite rapidly. It is not safe, therefore, to count on its employment for improving the fastenings in a permanent manner; at the beginning an improvement is obtained, but it does not seem to continue.

#### THIOLLIER TREENAIL.

Against excessive turning, which it is important to avoid, there is not any increase of resistance; the employment of the Thiollier metallic treenail seems, on the contrary, to produce this increase. This treenail is nothing but a steel helix of oval section, of which the number of spirals varies according to the pitch of the screw spike, and which is incorporated right at each screw spike of the tie in a socket previously cut in the tie by means of a cutting tap. The lining has the same pitch as the screw spike to be employed, and an interior diameter about the same as that of the core of the screw spike, in order to reduce the play between the two pieces to the minimum; the helix, prepared for its normal service, is always flush with the upper part of the tie, lines the place cut out for the plate, and, at its lower part, ought always to rest on at least 0.39 in. of wood not tapped.

According to the inventor, as soon as the squeezing force commences, by the contact of the cap of the screw spike with the rail or the chair, the lining increases in diameter, embraces the forms of the screw spike, which places the latter under protection against all spontaneous untightening, and assumes the function of a spring, all the different spirals obeying the force parallel to its axis transmitted by the screw spike.

The lining, by its diameter greater than that of the screw, engages the parts of the wood with a more extended surface than that engaged by the threads of the screw spike, and in re-employed ties, where the same site is preserved for the screw spike, the parts of the wood less altered or less blackened.

These advantages have caused certain railroad companies to employ the Thiollier lining. The results of extraction are essentially the same as those which are obtained with the Collet treenail, that is to say, the resistance is increased by about 30 per cent. But experience has not perhaps been sufficient to enable us to pronounce on the efficiency of the lining after a certain time of employment; and it is to be feared that there will be produced, as with the Collet treenail, a certain relaxation of the distended fibers. In each case the resistance to excessive turning is limited. It does not increase constantly, as a purely superficial examination would tend to prove. It is necessary to guard against squeezing it too tightly, for the spiral and the screw spike are made like a nut and its bolt. In acting on the bolt, the nut is made to ascend; the spiral ascends, the rings come to be pressed against each other and against the plate, tearing the fibers of the tie, and the apparent resistance to excessive turning is as much greater as the fastening is more dislocated. But it is easy not to reach this limit, and it is easily possible to remedy this disadvantage by providing the treenail with a spur applied against the bottom of the tie, and by diminishing the flexibility of the spirals in order that they may not be able to be pressed against each other.

Nevertheless, the Thiollier lining is an excellent palliative, for it increases the resistance to transverse overturning comparatively with the known systems, and is economical, since the lining can be placed without withdrawing the tie from the track, which produces an economy of about 1 franc (19.4 cents).

Apart from the effect of overturning, which is very rarely produced, while admitting at the same time that it can take place, there is occasion for considering the resistance which the rail, pro-

vided with its plate and its fastenings, presents to sliding. It has been possible to verify this resistance by means of the Collet décliné, and by a special arrangement which permits of direct action on the plates. The results of these experiments are given below:

Pine ties creosoted: With bare screw spikes.....	8,598 lbs.
With screw spikes and treenails.....	11,905 "
With screw spikes provided with Thiollier linings.....	15,212 "
New oak creosoted cross-ties with bare screw spikes.....	17,637 "
New beech creosoted ties.....	18,298 "

The following comparison can be made, so far as the forces for tearing out are concerned, according to whether the ties are or are not provided with treenails or spirals:

Pine ties: With bare screw spikes.....	6,834 lbs.
With screw spikes and new treenails.....	10,824 "
With screw spikes and treenails after 3½ years' service....	8,818 "
With screw spikes and spirals.....	9,148 "

It can be said, in recapitulation, that the Thiollier spiral presents 28 per cent. more resistance against sliding than the Collet treenail; the latter, on the contrary, offers 18 per cent. more resistance against tearing out than the spiral without interposition of the plate. In the case in point, it is therefore only a question of ties of soft wood, for with hard wood the resistance is more considerable, and the employment of the treenail or of the spiral is not pointed out.

It is evidently possible to consolidate the fastenings of ties in bad condition by employing either the Collet treenail or the Thiollier lining, but is the result obtained definite, and ought one to count on a constant and notable improvement? I do not think so, at least with the Collet system, because this treenail is cut from wood parallel with the grain; I reserve my approval so far as concerns the Thiollier spiral, because experiment has not been carried on for a sufficiently long time. Will there not be, on the other hand, a certain advantage, in point of view of resistance, in placing such systems in a composite tie, where the wood is compressed between two metallic parts? This is probable, because the wood is maintained in constant tension against the fastening, without it being possible to produce withdrawal. From the same cause the sinking of the rail in the tie diminishes, which reduces the inclination of the track by its spreading, as well as the movement of the joint.

The employment of the treenail and of the spiral, such as they are known, certainly does not constitute the only method of prolonging the life of ties in bad condition. A simple plug of wood, cut perpendicular to the fibers, can fill the same office, especially if care is taken to give it the form of a truncated cone, whose large base should be directed downwards. When tightening the screw spike the plug would be caused to rise, and its intimate contact with the tie would be assured.

But, whatever may be the type adopted, it is necessary to protect the head of the plug against atmospheric variations; for that a simple coat of tar with lime will suffice, in the case where the plate will not be adopted.

The employment of a bolt to replace the screw spike, with the bolt resting on the lower surface of the tie, is perhaps no longer an always satisfactory solution, because a reduction of resistance to overturning is to be feared. Against tearing out, on the contrary, the resistance is maximum.

(To be concluded.)

#### Plain Words from a Canadian Judge.

As a result of a wreck at Gourock, Ont., last September, on the Grand Trunk, in which three lives were lost, Joseph Thompson, a conductor, was sentenced to three years in the penitentiary. Sentence was passed by Justice Riddell. A part of his address is reproduced below, from the *Toronto News*:

"I must bear in mind the various objects, with which in view the law has affixed punishment to a crime. They are the reformation of the criminal and the prevention of similar offences by him and others. As to the first, I was shocked to see that instead of the leniency of the Crown being regarded with gratitude, it was made a ground of complaint. Instead of admitting the violation of the rules laid down with the approval of your governor-general-in-council for your guidance, a violation which was proved to have been committed by yourself more than once, you attempted to bolster up a defence by statements which nobody believed; and you apparently hoped that the jury might through prejudice against the railway company be false to their oaths and to their duty to their country.

"I must bear in mind the various objects with which in view part. Instead of repentance for your own crime you seek to cast all the blame upon others. For your own sake, then, I must cause some substantial punishment to be inflicted. More men are killed in Canada upon the railways every year through preventable causes, by reason of sheer negligence, than Canada lost in the Boer war. If this were the fault of the rules or regulations of the railway companies, then terrible were the guilt of those responsible for such rules. If you and your fellow trainmen had used even ordinary care, the three men now lying in the grave as the result of your

act might now be happy and useful citizens. It has been said that the present condition is due in large measure to a widespread lack of discipline. If so this must be improved.

"You were a conductor of very long experience, a capable man in every sense of the word. You were on a choice route, which realized for you a rate of pay considerably higher than the average rate at which conductors on freight trains are paid (your remuneration was about \$40 per week). Your hours were long—too long—though you had two clear days in the week to rest, the hours of the other five were nineteen to twenty per day, and sometimes more.

"You knew that you had the right, under the rules, to a rest of eight hours, once you had worked sixteen hours; and there can be no doubt that you continued on the route because of its remunerative character. You knew that if you desired you would be put upon a run involving fewer hours of continuous work, but that if you did so, your pay would be less. You stoutly asserted that you had plenty of sleep, that you by many years' practice had trained yourself to be content with a few hours per day, and no responsible officer of the company ever heard any complaint from you that you wanted your hours of work reduced. You were permitted to continue on the long route.

"To my mind, the persons who even permitted you to work nineteen to twenty hours per day, day after day, five days in the week, were guilty of a gross wrong; the persons who made rules and regulations under which this was possible, are themselves almost or quite as guilty morally, perhaps legally, as yourself of the death of these three poor victims. And I shall cause to be sent to the Crown authorities a copy of the proceedings of this trial, with the recommendation that all proper investigations be made and that the persons responsible, no matter what their position may be, be proceeded against, so far as the criminal law permits. It were wrong to punish an employee and allow the employer to go scot free, where both are at fault."

Justice Riddell then cited the explicit disobedience of order which caused the wreck. It was the old story of attempting to make another siding before the other train arrived. The prisoner confessed this disobedience, but tried to put the blame on the engineer. Of this the justice said:

"You were wide awake then; and your conduct there and then was simply without excuse. The engineer, upon whom you try to throw the blame, knew, or might have known, as well as you, the danger, but his negligence if he was negligent—and that has yet to be tried—does not in the least relieve you."

Thompson pleaded that he had fallen to sleep as a result of his long working. Justice Riddell disposed of this point by saying: "Your plea is that you fell asleep, but if the sentry sleep no excuse is accepted; the penalty is death. What is to be said of you? If men in charge of dangerous engines are taught that if negligence on their part result in death or injury, punishment must inexorably follow, we shall cease to hear of so many horrors which could, and therefore should, have been prevented. I have been told that I may exact a fine. I refuse even to consider the exaction of a fine or to do anything which could suggest that the stain of the blood that is on your hands can be washed out with money. It is hard to see any circumstances of mitigation, to discover anything which justifies me in reducing the punishment below the term mentioned in the act, but I am inclined to be merciful. I remember that you have not before been guilty (so far as appears) of any similar offence."

#### Traffic Through the "Soo" Canals and the Detroit River.

The American and Canadian canals at Sault Ste. Marie together carried, during the season of 1906, 51,751,080 net tons of freight as against 44,270,680 tons in 1905, an increase of 7,480,000 tons, or 17 per cent. It is interesting to remember that the increase in 1905 was 12,724,574 tons, or 40 per cent., over 1904.

The following table shows for each of the decades following 1855, the year in which the first canal was opened, the total increase in tonnage for each 10 years and, in the second column, the average percentage of yearly increase in traffic. By adding the tonnage carried in 1905 and 1906 the total amount of freight carried since the canals were opened is found to be over 450,000,000 net tons.

	Tons.	Per Ct.
1855-1864 .....	1,203,358	44
1865-1874 .....	4,829,247	12
1875-1884 .....	14,868,639	17
1885-1894 .....	80,343,218	17
1895-1904 .....	253,002,697	12
1905 .....	44,270,680	
1906 .....	51,751,080	
	450,268,919	

The American canal opened last year on April 13 and closed December 17, making a season three days longer than in the preceding year. The traffic through the American canal was 87 per cent. of the total freight. American vessels carried 95 per cent. of the total freight traffic, the same proportion as in 1905.

Of the total of a little over 51,750,000 tons of freight carried 10,166,175 tons were westbound and 41,584,905 tons eastbound. Iron



ore furnished 35,357,042 tons, or 68 per cent. of the total freight tonnage. The next largest item was coal, of which 1,011,375 tons of hard and 7,728,255 of soft were carried. The iron ore tonnage increased 13 per cent. over 1905. The increase in 1905, however, was 60 per cent. The wheat carried increased 23 per cent., following an increase of 37 per cent. in 1905.

The rapid increase in size of lake steamers is clearly shown. Until 1904 there was no vessel passing through the canal over 500 ft. long, or which carried more than 9,000 net tons. In 1904 one vessel over 500 ft. long was put in service which had a capacity of over 10,000 tons; there were also three other vessels with a capacity of between 9,000 and 10,000 tons put in commission that year. In 1906, 44 new freight steamers were put in commission for the Lake Superior trade. Of these, 32 were 500 ft. or more long and carried between 9,000 and 14,000 net tons of freight in a single cargo. There are now in commission 57 steamers between 500 and 600 ft. long with a beam of from 52 to 60 ft., as against one in 1904. The largest vessels are 600 ft. long, 58 ft. beam and carry 13,000 to 14,000 tons. In 1904 there was no vessel which carried over 12,000 tons; in 1906 there were 12.

For the season's largest single cargo the steamer "J. P. Morgan," of the Pittsburgh Steamship Company (United States Steel Corporation), holds the record of 13,272 tons. The steamer "E. H. Gary" of the same line held the 1905 record with a single cargo of 12,368 net tons. For the two years previous to 1906 the steamer "Augustus B. Wolvin," of the Acme Steamship Company, which also in 1904 carried the largest single cargo, held the record for the greatest amount of freight carried during the year, and for the greatest number of ton-miles. It was outstripped in both of these records last year by the "E. H. Gary," which carried 313,434 tons of freight during the season and ran 42,986 miles, which makes 249,353,656

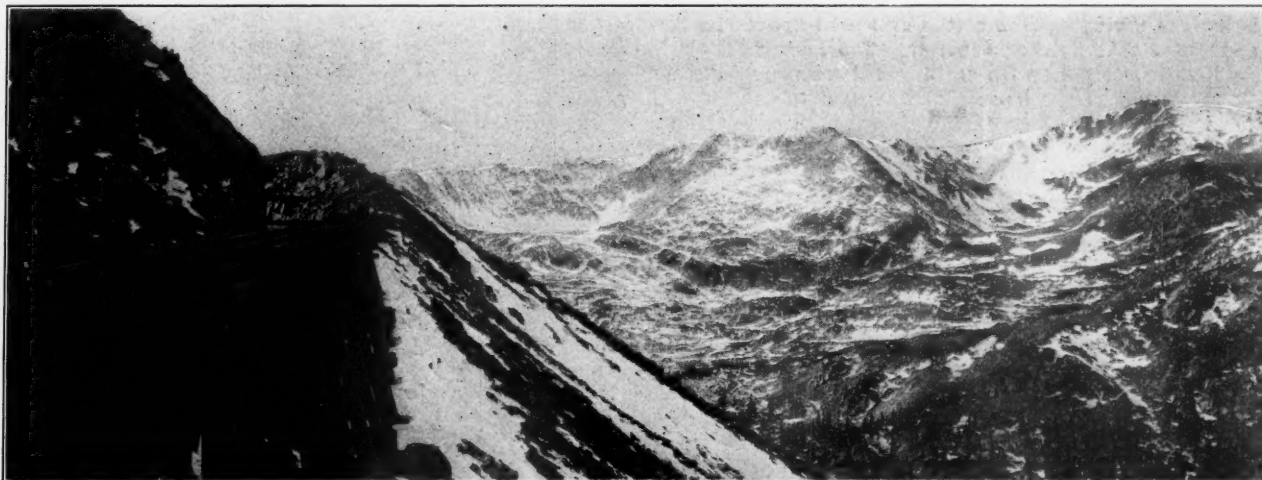
freight carried during 1906 was 63,808,571 net tons, an increase of 4,761,275 tons, or 8.5 per cent. over 1905. The concentration of the traffic on fewer and larger steamers is shown in the fact that in spite of this larger traffic there were 410 less vessel passages through the Detroit river. The figure for actual amount of freight carried is based on the proportion of actual freight to net registered tonnage which obtained during 1905 at Sault Ste. Marie, where in that year the actual freight was 25.92 per cent. greater than the registered tonnage. There were 60,589,441 tons of freight which passed through the St. Clair Flats canal during 1906. This canal is north of Detroit at the northern end of Lake St. Clair. It has been found from custom house records at Detroit that 2,581,488 net registered tons that used the Detroit river did not go through the St. Clair Flats canal, but turned around and went back down the river. This amount, therefore, should be subtracted from the Detroit river tonnage for an accurate estimate of the amount of freight carried through the Detroit river to the northern lakes.

The following table shows the commerce passing through the Detroit river for the last five years:

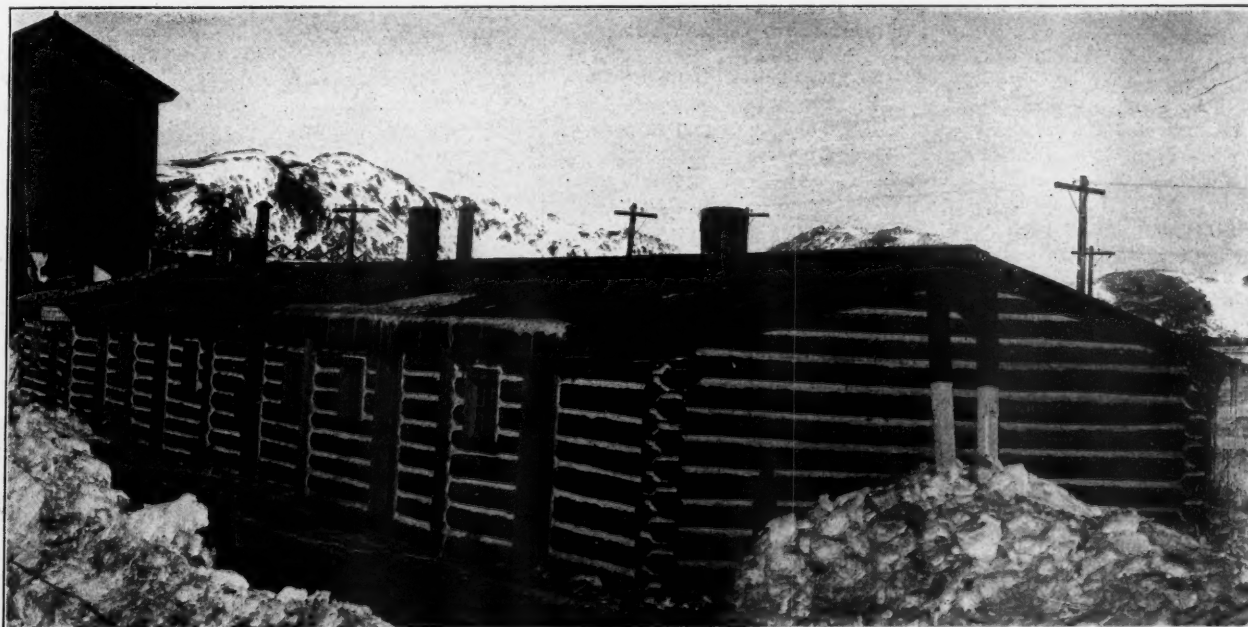
Year.	No. of Passages.	Net Registered Tons.	Actual Freight.	Value.
1902	33,000	39,328,689	44,260,506	\$440,834,460
1903	33,113	37,453,796	46,817,245	471,917,830
1904	29,472	33,049,984	42,792,236	453,598,656
1905	35,599	45,912,622	55,508,360	522,888,751
1906	35,128	50,673,897	63,808,571	662,971,053

#### Mountain Scenery on the Moffat Road.

We have previously published a number of photographs taken along the line of the Denver, North-Western & Pacific. Of the two shown herewith, the view from Slide Rock bridge, east of the Continental Divide, is of interest as showing where the tree line stops.



View from Slide Rock Bridge; Denver, North-Western & Pacific.



Highest Railroad Station in the World; Corona, Colorado, 11,629 ft.

ton-miles for the season and gives it the record for all three performances.

For the first time a record of the lake commerce passing Detroit, Mich., and Windsor, Ont., through the Detroit river, is included in the annual report of the "Soo" canals. The total of actual

The Corona station, 11,669 ft. above tidewater, is, we believe, the highest steam railroad station in the world. There is always snow at Corona, and the management makes a special feature of snow-ball excursions, run from Denver in the summer months. The station is built of logs, caulked with wool and cement.

## Proposed East River Bridge; New York Connecting Railroad.

The accompanying illustrations from the architects' drawings show the general appearance of the proposed bridge over the East river at Ward's and Randall's islands to be built by the New York Connecting Railroad, and which will join the belt line now building around Brooklyn from Bay Ridge on the harbor with the Harlem river branch of the New York, New Haven & Hartford. The bridge and the approaches are in reality a series of bridges of many different types, with a total length of over three miles with the main channel arch over Hell Gate as the crowning feature. This huge arch of 1,000 ft. clear span will be the largest structure of its kind in the world, being more than 200 ft. longer than the Niagara gorge arch and designed for much heavier loads.

The south approach in Queens county, Long Island, is a succession of reinforced concrete arches and plate girders over the numerous intersecting streets, the intermediate sections being an earth fill with heavy concrete retaining walls. Some 135 ft. girders are required at one street crossing. The steel viaduct approach to the main arch consists of a plate girder superstructure supported on steel rocking towers spaced about 75 ft. apart. At intervals of about 800 ft. are concrete stability piers filled with gravel, to which the floor stringers are anchored. Expansion joints are provided in the center of the distance between these piers, but no roller bearings or other movable supports are included in the design.

The main arch is flanked on each side by the abutment piers, which are carried up 200 ft. in the form of double towers. These will be of massive proportions and elaborately ornamented above the deck. They will rest on compact gravel and hard pan, the bottom of the foundations being above the high-water line, and will, therefore, be much less expensive to build than would foundations for any other type of bridge requiring piers in or close to the water. The part below the springing line of the arch will be granite-faced masonry, and above that finished concrete. The main body of the piers will be hollow and filled with earth and stone to provide sufficient weight to counteract the horizontal thrust of the arch.

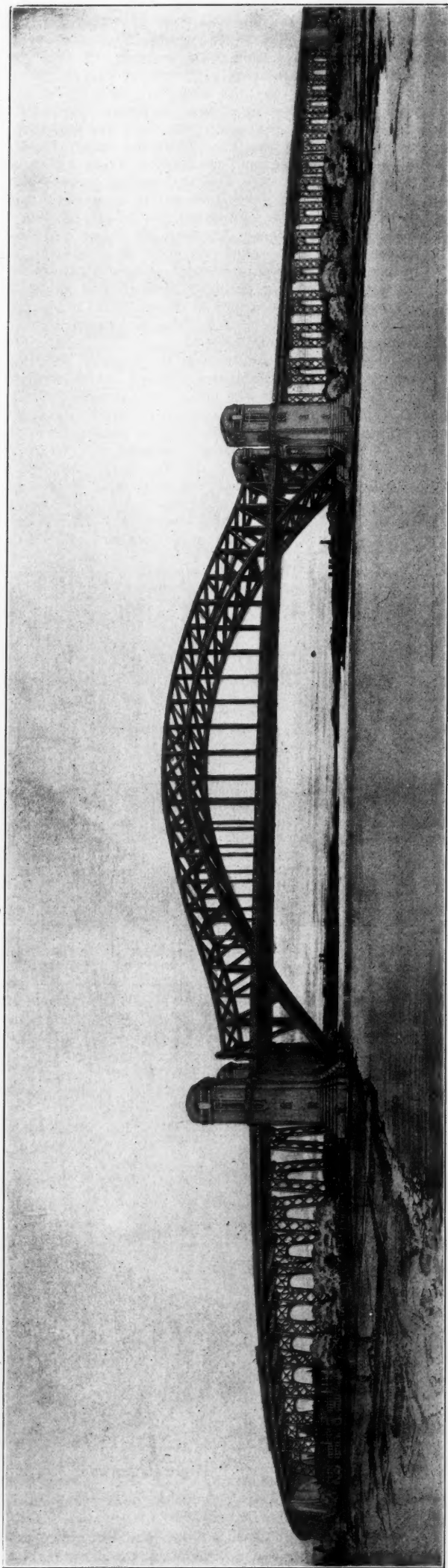
The arch will be 300 ft. high at the crown, with a clear waterway under the floor of 140 ft. The panels are of uniform length, 42 ft. 6 in. At the crown the depth of 40 ft. was imposed by the conditions of the design and similarly the height at the portal was that required for the end bracing and head room over the tracks. The peculiar but very symmetrical reverse curve of the upper chord resulted from the determination of the height of the intermediate panels to provide a uniform increase in the compressive stresses in the bottom chord from crown to abutment. Ample wind bracing is provided between the arch trusses, which are spaced 60 ft., center to center, as well as in the floor system.

The floor system consists of deep plate girder stringers under each rail and crossbeams at each post, interlaced with diagonal bracing. There will be four tracks, two for passenger and two for freight trains, with material platforms between. The rails will be laid on ties embedded in 15 in. of stone ballast, laid on a floor of 8-in. creosoted and caulked timbers. This construction will be used throughout on the metal superstructure of the main arch and approaches. The bridge has been designed for live loads on each of the four tracks, consisting of two 190-ton locomotives coupled and followed by a uniform load of 5,000 lbs. per lineal foot.

While the arch may be considered as two-hinged, the abutment bearings will be solid and made without pins. The whole design is such that the movement at the crown is only a few inches, and in a structure of this size it was considered useless to provide for very small movements at the abutments. There are two expansion joints in the floor system of ingenious design. They are so arranged that the opening is never more than  $\frac{1}{8}$  in. under any conditions. This was done to prevent the whole floor system moving under the action of a train starting or stopping on the bridge.

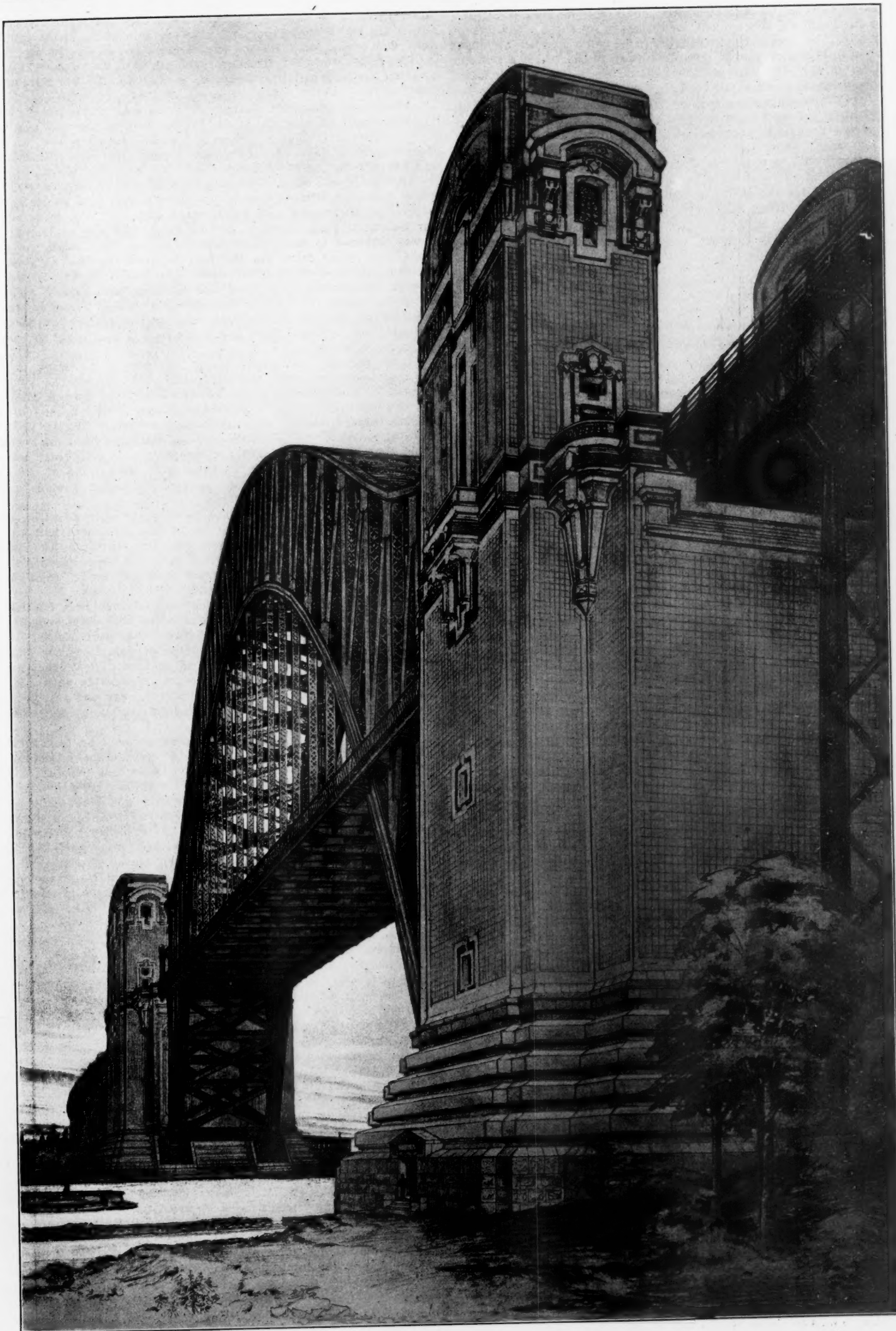
Beyond the main arch the viaduct is continued over Ward's island to Little Hell Gate, which is not navigable to deep-draught boats, and therefore required only an ordinary deck lattice truss bridge of five spans, varying in length from 105 to 245 ft. Beyond this the viaduct is continued over Randall's island to the Bronx kill, where a double lift bridge, having two spans of 160 ft., will be built. The line curves on a 3 deg. curve from a point 80 ft. north of the Hell Gate arch and then continues on a tangent to the main land at Port Morris, where connection is made with the New Haven. The maximum grade will be 0.72 per cent. compensated.

The method proposed for erecting the main arch is somewhat similar to that employed with the cantilever bridge now building over Blackwell's island further down the river. The abutments and towers will first be built up to the level of the floor and the skew backs erected on falsework at the base. A temporary steel tower about 175 ft. high will be erected on top of each pier and anchored in the rear by eye-bar chain cables with a strength of 1,700 tons. These cables will be carried back to a "dead man" about 425 ft. in the rear of the abutments. The main floor girders will be brought to the bridge site and buried in the ground in four rows or columns between the "dead man" and the abutment to take up the horizontal



Proposed Bridge of the New York Connecting Railroad Over the East River at Ward's and Randall's Islands.





Perspective View of Arch and Piers of Proposed Bridge Over the East River; New York Connecting Railroad.

thrust. In the beginning the shore panels will be erected by derricks on the piers, and as soon as these are up the eye-bar anchor chains will be anchored to the structure, being carried up about 90 ft. on the temporary tower and then down to the rear. A traveler running on the top chord will be used to erect the arch, hoisting the members from scows moored in the channel below. After the first few panels have been erected the anchor chain will be raised to the top of the tower and the remaining erection completed. Closing of the arch will be done by manipulating sand or hydraulic jacks mounted under the foot of the temporary towers. No additional metal will be required in any of the members in the arch to provide for excessive stresses during erection.

The plans for the entire structure, which were made by Gustav Lindenthal, Consulting Engineer, and Palmer & Hornbostel, Architects, have been submitted to the Municipal Art Commission for approval. The bridge in many respects is one of the most daring and remarkable engineering structures ever proposed. In spite of its great weight, 80,000 tons, it is claimed that it can be built and erected at less cost than any of the other bridges over the East river.

We are indebted to Mr. Lindenthal for the information here given.

#### Unnecessary Empty Car Movements Between Chicago Terminals.\*

Disagreements and disputes between inspectors as to responsibility for defects existing in cars occasion more unnecessary empty movements than any other known cause, and my experience is that investigations are generally barren of results. Why this should be I am not in position to say; I only know that it is so, and so far as I can see there is no excuse for it. At the same time, I admit I am not qualified, by practical experience, to judge of the merits of a case involving mechanical points because I am not a car builder, but there is one thing I do feel pretty sure about, and that is that the mechanical departments are largely at fault for conditions tending to wastefulness and contributing to bad work in a terminal where there is neither room nor time to spare, and it is to that department, without bias of any kind, that I desire most particularly at this time to speak.

If it were not customary, and necessary as well, to interchange cars in bad order, it would be easy to find a remedy for the difficulty referred to by making an agreement that delivering lines must invariably see to it that all cars offered in interchange shall be put in good order beforehand, but such a restriction would hamper and retard the movement of traffic in a most vexatious way. Moreover, it would nullify, if not entirely destroy, one of the wisest provisions of the Master Car Builders' rules. A great many cars cannot be repaired under load, and, as transfers fall on receiving lines in Chicago, such cars are delivered to connections, shipments transferred and cars returned, and here is where the trouble begins.

It frequently happens that existing defects are made worse in switching, and when such a car is returned to the delivering line it is rejected by the inspector and, without any attempt being made to adjust matters the car is immediately sent back. Then begins the shuttle-cock process and before the case is settled it may make many movements between two railroads, because one does not want it and the other won't have it—all the while piling up trackage and per diem for the juggling roads to pay and depriving the owner of the use of his car besides.

The interchange of cars between the St. Paul and most of its connections in this terminal is through the belt lines. The charge for moving an empty car is a dollar one way and, in addition, a reclaim of 25 cents is allowed for the intermediate move, making the charge to the delivering line \$1.25 to \$2.50 for the round trip. I have a number of cars that have made unnecessary movements between the St. Paul company and its connections, and if you will follow me I will endeavor to show you what these unnecessary movements entail in the way of expense.

D., L. & W. car 23,060 made four round trips empty between the St. Paul and the New York, Chicago & St. Louis roads between February 17 and April 15, at an expense for trackage and per diem of \$40 before its case was finally settled. In this case candor compels me to admit that the evidence is against our own people, but that is not going to deter me from an open confession of the facts. This car was delivered to us under load and in good order, it is claimed, and we returned it with two center sills and one inner sill broken, making a combination of defects. The N. Y., C. & St. L. refused to receive it and our Chief Inspector went to Stony Island and saw their Master Mechanic at that point about the car. The next day a letter was received from him saying he would accept the car on the following conditions, namely, that the car should carry home route cards and that the two center sills be planked in proper shape so that the car will be safe to handle in trains to Buffalo. Also, that defects on car must be fully covered by our M. C. B. defect card. Admitting, for the sake of argument, our defenseless position in sending an empty car to a connecting line in such a condition, let me ask first, why should a delivering line be

called upon for a home route card for a car that was entitled to return via the Nickel Plate to the owner, one of its direct connections, and second, why did the Nickel Plate not repair the car, load it to Buffalo, or in that direction, and call upon us for defect cards covering our responsibility, according to Rule 8 of the Car Foreman's Code?

These questions are not asked with a view of letting the St. Paul down as easily as possible, or for the purpose of showing that the Nickel Plate is to blame. Here is a 60,000 capacity box car out of service for 60 days while two roads juggle it between them empty and pay \$40 for the privilege.

Georgia Southern & Florida ventilated fruit car 2,363 was received from the Illinois Central via the Chicago Belt February 23, loaded for Milwaukee, and when made empty it was returned to our Galewood yard where it arrived March 1st and on March 2d it was returned to the Illinois Central via the Belt. This car also made four round trips via the Belt between the Illinois Central and our line and was last returned to us March 26, and is in our yard at this writing. Per diem and trackage accumulated on this car to the amount of \$32.50. This makes a total of \$72.50 for three roads to pay for the privilege of juggling two empty foreign cars between them, which I think you will admit is equivalent to throwing so much money away.

I am not able to furnish much information in regard to the last mentioned car. Our chief inspector went to see the general foreman of the Illinois Central and reported that he said the car was not rejected by his inspectors, although it was in bad order, but the Superintendent of Transportation of the Illinois Central wrote to me that it was rejected by his inspectors and he further stated that his company will not accept cars in bad order unless fully carded for defects. At the same time, Rule No. 8 of the Car Foreman's Association does not require that cars should be so carded. That rule reads as follows:

"It is understood that in the interchange of cars within the Chicago switching district all parties to this agreement will accept as their own the record of the receiving line, so far as the condition of the car is concerned, and that M. C. B. defect cards will be furnished for such defects when proper request is made, when based on M. C. B. rules and this agreement."

The Master Car Builders' Rules provide that cars offered in interchange must be accepted if in safe and serviceable condition, the receiving line to be the judge in cases not provided for in Rules 3 to 56 inclusive and in the declaration of principles the Master Car Builders' Rules must positively affirm that "These rules make car owners responsible for, and therefore chargeable with, all repairs to their cars necessitated by ordinary wear and tear in fair service, so that defect cards will not be required for any defects thus arising."

One thing is made clear to my mind at least by this exhibit, which is that there is a wide difference of opinion among employees of the Car Department regarding the intent and purport of the M. C. B. Rules of interchange and the subsidiary rules of the Car Foreman's Association, otherwise empty cars would not make such movements as have been cited. This may be due in great measure to the failure of those whose duty it is to properly instruct inspectors respecting their duties and in part to a mistaken idea that it is the duty of an inspector to get ahead of others by employing sharp practices if necessary. There is a cause for every effect and as we know what the effect is in this case, we ought to find the cause and a remedy for it. In this connection I would make the following suggestions:

When an empty car, foreign to your road and to the delivering line, is received in bad order, don't let your inspectors fire it back on the next transfer without calling the attention of the Chief Inspector to it, and don't send it back then until you have notified the Chief Inspector of the delivering line of your intention to do so and given him the reasons for that course. Then see to it that all cards of every kind are stripped from the car and that your cards are put on both sides, plainly indicating that the car is being returned on account of being in bad order and, in addition, bill it to Mr. Blank, Chief Inspector of Blank Railroad, and show on billing defects which you object to. Take every legitimate means at hand to protect your company from imposition, but remember that the mutual interests of the railroads centering in a common terminal are entitled to great consideration at your hands and that all lines should work as one for the common good, when they can do so without detriment to their own interests. Try to impress upon the minds of the inspectors this important fact, namely, that every time you move a car it costs money which somebody must pay and that unnecessary movements must be avoided.

Every road in Chicago has a way of protecting itself if it finds other lines are acting unfairly in the matter of giving it empty cars in bad order. It can return a car and charge the delivering line one-half the regular rate, \$2.50, and in addition to that, the reclaim for three days per diem and, in addition to that it can insist that Belt Line charges shall be assessed against the line at fault. So you see it is possible to make it expensive for any line guilty of unfairness.

\*Abstract of a paper by W. E. Beecham, Car Accountant of the Chicago, Milwaukee & St. Paul, before the Western Railway Club.



# GENERAL NEWS SECTION

## NOTES.

The New York State two-cent passenger bill has now passed both houses, and awaits action by the Governor.

All roads operating out of Chicago continue to report satisfactory traffic conditions. The car shortage is now less severe than it has been.

The Union Pacific on May 25 announced an increase of from one cent to three cents an hour for all carmen on the system, effective June 1.

The new third-rail line of the Philadelphia & Western was opened May 22 from the Union Station, 69th and Market streets, Philadelphia, to Strafford, 15 miles.

The Metropolitan Line, running freight boats between Boston and New York as a part of the Morse combination, has revised its rate schedule to conform to the standard in effect before the Joy Line entered the field.

Following the enactment of the two-cent passenger law in Pennsylvania, the Philadelphia & Reading announced May 23 that when the spring schedules go into effect next Sunday there will be a general increase in these rates, averaging from 10 to 35 per cent.

The Connecticut upper house has passed a bill forbidding a change of the signal system without approval of the railroad commissioners; another providing a way for requiring the stopping of passenger trains at stations when demanded by local authorities, and a third providing for removing all kinds of obstructions to view at grade crossings.

According to a western railroad officer, 10,000 telegraph operators could to-day find steady employment in the South and West. The present demand will be increased on January 1, 1908, when the law limiting the hours of railroad telegraphers to nine hours goes into effect. The officer quoted suggests that a great field is here open for young women.

As a result of the recent decision of the Interstate Commerce Commission in the Atchison, Kan., case, to the effect that the railroads could not make an allowance for elevation at Omaha and Kansas City and refuse it at Atchison, the Chicago Board of Trade has made a demand upon the railroads for an allowance of half a cent a bushel for the elevation of grain at Chicago.

It is said that the Pacific Express Co. has closed a long-time contract with the traction companies operating between Toledo and Dayton, whereby these companies will retire from handling express independently on June 1, the Pacific Express Co. taking over the business on that date. This is understood to be the first of the old line express companies to take over traction business.

The state railroad commission of Montana has given notice to the Interstate Commerce Commission of an agreement with the Great Northern, the Northern Pacific, and the Butte, Anaconda & Pacific, under which these railroads undertake to issue at as early a date as practicable, an interchangeable 3,000-mile ticket good for one year from date of sale, at the rate of 2½ cents a mile.

The two-cent passenger rate law in Arkansas is to be contested by the railroads on the grounds that the Governor never signed the bill, although what purports to be his signature is attached; also that if he did approve the measure he was in an unsound mental condition; also that the act is confiscatory, and that the Arkansas roads cannot operate under a two-cent law and pay expenses.

The Pennsylvania Railroad on May 22 filed a bill in equity against the County of Philadelphia asking the common pleas court to enjoin the defendant from demanding any penalties for any violations of the act of April 13, 1907, which provides that the two-cent passenger rate shall go into effect on October 1 and is compulsory upon every company operating a railroad in whole or in part in Pennsylvania.

Announcement is made by the Illinois Central that on June 1 it will establish a rate of 2½ cents a mile for each member of public parties of ten or more. The rates apply to all points south of the Ohio river. The Illinois Central is the first line to act on the recent ruling of the Interstate Commerce Commission that exclusive party rates would be abolished on May 31. Other lines have been against any reduction of fares in this class of business.

The Board of General Appraisers has overruled the protest of W. P. Plummer, of New York, in regard to an importation of steel rails, which were assessed as such at seven-twentieths of a cent per pound under paragraph 130, and which were claimed to be

dutiable at \$4 per ton as scrap fit only to be remanufactured. The importer's contention was based upon the fact that the rails are of an obsolete type, but the board thinks that they can still be employed as rails and that it was not proven that they are in fact in the nature of waste.

The judgment for \$275,538 entered in the Supreme Court against the Manhattan Railway Co. and in favor of the city of New York on the report of Hamilton Odell as referee, has been affirmed by the Appellate Division of the Supreme Court. The judgment represents the amount due by the company under a law passed in 1867. By this law the West Side & Yonkers Patent Railway Co. was authorized to build an elevated railroad in Manhattan, but it was provided that the company should forever pay into the city's treasury 5 per cent. of the net income from passenger traffic on Manhattan Island. The road, now the Ninth Avenue Elevated, was opened in 1879, and the Manhattan Railway Co. succeeded to the rights and franchises of the West Side & Yonkers Co.

The dispute which has been waged by the western roads over lengthening the schedule of the through passenger trains was ended May 24, when an agreement was reached to put into effect on June 9 new schedules adding three hours to the present running time of the fastest trains from here to San Francisco, and four hours to the present schedules of eastbound trains from San Francisco. The actual running time from Omaha to San Francisco and Los Angeles of the Overland Limited trains on and after June 9 will be 76 hours and 28 minutes, an increase of about 5 hours. In addition to generally lengthening the schedules of passenger trains between here and the principal western cities on June 9, several hours will be added to the schedules of all freight trains except those hauling live stock, from the Missouri river and points beyond.

## Commissioner Prouty on Future Railroad Legislation.

In a speech before the Manufacturers' Convention held in New York last week, Charles A. Prouty, of the Interstate Commerce Commission, spoke on the general subject of railroad legislation. He advocated the establishment of a railroad department of the national government, with a cabinet officer at its head. He said that his observation had shown him that whatever federal body regulates interstate railroads must be charged with the duty of correcting unlawful rates and practices, and must have the power to institute and prosecute suits on behalf of the public on its own initiative. He also argued that the regulating body must exercise the same control over the operation of railroads which it exercises over their rates. The principle of reciprocal demurrage does not appear to him just to the railroad or of much practical benefit in actual experience. The necessity of regulation of conditions under which freight cars are interchanged by the different railroads, so that a road with adequate equipment can be protected from levies on its cars by roads not properly supplied with equipment, is referred to as a reason why the federal body should have power over railroad operation. There is no room for doubt that the national government should exercise some direct control over the capital accounts of interstate railroads, should supervise the leases into which they enter, and determine the circumstances under which one may buy the stock of another and the extent to which a holding company may direct the operations of a road. Railroad securities ought to be a favorite investment for the savings of the small and great alike. Mr. Prouty continues:

"Carriers are required to establish rates which are just and without discrimination. I am utterly unable to see how this can be done without the right upon their part to confer and agree.

"I do not think that railroads should be allowed to pool their earnings or tonnage. The argument put forth for that privilege in the past no longer exists, since rebates are no longer paid."

## Police! Train Afire.

"There's an express train afire tearing up past me on the Central. It has just come out of the tunnel—and will the police please hurry."

Police Headquarters got the word and passed it along so fast that Engine 36 and Truck 113 were drawn up at the 125th street station of the New York Central when the Buffalo and Cleveland Special, drawn by an electric locomotive, which had left the Grand Central 13 minutes before, got in. It was surely enough on fire—that is, the forward hood of the buffet car was. There was some smoke, and flamelets that were red enough to be seen. The train crew had spied the smudge and had hand grenades working when

the real firemen hit the job. The occupants of the ten passenger cars turned out and looked on. The train was delayed nine minutes. —New York Sun.

#### Schedules by Popular Vote.

A local organization at New Orleans having complained to the Southern Pacific management that owing to the fact that the first train in the morning for Houston did not leave until 6.40 a.m. and was a slow train, Houston had considerable advantages in the way of papers and train service to towns half way between the two cities, the Southern Pacific is taking a vote of the travelers on the early morning train out of New Orleans as to whether an earlier train shall be put on. The tickets numbered serially are issued to each adult passenger on the train. They read as follows:

"No. ....  
 "The New Orleans Progressive Union has asked this Company to start its local passenger train No. 5 from New Orleans at an earlier hour than it is at present scheduled. In the opinion of the Progressive Union, the fact that the first train leaving Houston, Tex., meets No. 5 at a point east of the midway point between Houston and New Orleans places the latter city at a disadvantage with Houston and other Texas cities. It is the desire of this Company to run its local passenger trains at such times as will best suit its patrons, and in order to ascertain their sentiment in this matter, you are respectfully requested to indicate hereon whether or not you would favor starting this train from New Orleans at 5:30 a. m., instead of 6:40 a. m., as has been requested.

"Employees of this Company are positively forbidden to attempt in any way to influence passengers in their expressions in this matter, and I will appreciate a report of any violations of these instructions.

"E. B. CUSHING, General Superintendent.

"F. E. BATTURS, G. P. A.

"I favor the change .....  
 "I am opposed to the change .....  
 "Signature .....  
 "Postoffice address .....  
 "Date .....  
 "Please indicate your vote by cross-mark on proper line."

#### "Record Discipline" on the Atchison.

Merit marks were placed to the credit of 36 employees of the Atchison, Topeka & Santa Fe in April, as reported in the *Employees' Magazine*. We quote a few of the items:

Charles L. Stewart, baggageman on Nos. 9 and 10, officially thanked for taking to ticket office, in Kansas City, passenger to whom ticket was sold to Chicago.

O. D. Wingo, barber-baggageman on trains 3 and 4, officially thanked for bringing to ticket office, in Chicago, a passenger to whom was sold a ticket to Los Angeles.

L. M. Johnson, engineer, Wichita, 10, for securing passengers for our line, persuading them to wait over and take the Santa Fe rather than use the line of a competitor.

S. G. Kinney, engineer, Middle division, 10, for observing defective rail on Sand Creek bridge and reporting it to section foreman, thereby avoiding a possible serious accident.

N. J. Cody, brakeman, Arizona division, 10, for watchfulness in discovering brake rigging down and taking immediate steps to stop his train before derailment could occur.

H. Chitwood, engineer, Southern division, 10, for prompt action in baling oil from a tank car containing company oil to tank of engine 202, enabling him to get over the road without delay.

George R. McIntosh, engineer, Midland division, 10, for firing engine from Arkansas City to Emporia, instead of delaying or giving up train account of having student fireman, who was unable to keep the engine hot.

E. H. Marshall, engineer, Missouri division, 5, for making practically schedule time with No. 2, after meeting with accident. A valve stem had broken; engineer disconnected engine and ran a distance of 70 miles with 11 cars, working engine on one side.

J. B. Neale, engineer, Los Angeles division, 10, for carefully inspecting long freight train on descending grade as he rounded curves, with result that he saw sparks of fire flying and, upon stopping train, found brake-beam dragging, which probably would have caused derailment.

#### Federal Commission Twice Sustained by the Supreme Court.

Two decisions have been handed down in the United States Supreme Court by Justice McKenna, Justice Brewer dissenting, sustaining orders of the Interstate Commerce Commission. One of the cases, the Central Yellow Pine Association v. the Illinois Central et al., involved an advance of 2 cents per 100 lbs. in rates on yellow pine lumber from East Louisiana, Alabama and Mississippi to Cairo and other Ohio river points, Evansville, Louisville and Cincinnati. The other case involved a similar advance in rates on lumber from Georgia to those Ohio river points. The Commission issued orders in both cases forbidding enforcement of the higher rates. The cases, which involved large amounts and

questions of great importance, were strenuously contested, not only before the Commission, but in both the lower courts and the Supreme Court. The Supreme Court's decisions cannot fail to strengthen the hands of the Commission. The opinions of the Commission were rendered by Commissioner Clements.

#### Mr. Yoakum on Texas Railroads.

B. F. Yoakum is quoted as follows in the *St. Louis Globe-Democrat*:

While many of the acts of the Texas legislature dealing with operation of railroads will prove expensive, and some of the tax laws will greatly increase our burdens of taxation, yet upon the whole the legislation of the past session was not so inimical as many had feared and I believe that the legislature and the people of Texas ought to be congratulated on the fact that so much proposed unwise legislation was defeated. I am greatly pleased that the legislature did not deem it wise to reduce the passenger rates in Texas. I am sure that all the railroads interested in Texas, as well as the Texas roads, feel the same way and that they will not only give expression to their appreciation in words, but there will be substantial evidence by the expenditure of liberal sums of money in advertising with the view of bringing new people into the state.

The people want, and have a right to expect improved service. This is a comparatively new country, vastly short of railroad facilities, and there are many requirements of the railroads to properly take care of the growing business. To injure the railroad earning power at this time would seriously affect the interests of the people of the state. There are still large areas in Texas that must have transportation. Let us look at it from a broad and liberal business standpoint. Let us gridiron the state with good railroads to properly serve its people and take care of its present growing business. To accomplish this I am confident the railroads will do their part.

#### International Traffic Through Mexican Gateways.

An official report issued by the Mexican Government gives the following figures of traffic across the Rio Grande from July 1 to Dec. 31, 1906:

National of Mexico.			Mexican International.		
	Cars.	Freight, tons.		Cars.	Freight, tons.
Laredo—			Ciudad Porfirio Diaz		
To Mexico .....	9,724	261,713	To Mexico .....	5,486	124,234
From Mexico .....	906	9,056	From Mexico .....	3,083	3,855
Total traffic ....	10,630	270,769	Total traffic ....	8,569	128,689
Mexican Central.			Sonora Railway.		
	Cars.	Freight, tons.		Cars.	Freight, tons.
Ciudad Juarez—			Nogales—		
To Mexico .....	3,843	63,591	To Mexico .....	1,537	20,453
From Mexico .....	3,282	45,858	From Mexico .....	1,478	15,756
Total traffic ....	7,125	109,449	Total traffic ....	3,015	36,209

During these six months 20,590 cars entered Mexico from the United States, and 8,749 came north across the border, leaving 11,841 of the cars in Mexico. These 20,590 cars carried 469,991 tons of freight from the United States to Mexico, and the 8,749 cars which returned carried 74,525 tons from Mexico to the United States.

#### Strike of Machinists on the Erie.

Of the total of about 900 machinists employed by the Erie Railroad, all the union members, about 700, have quit work. According to the management's statement, issued on May 25, the only contention that the men have is that piecework be abolished. It is understood by the Erie officers that the machinists' union has decided to make a general fight against piecework and to begin hostilities on the Erie. The railroad men say that there is good reason for this from the union standpoint, as the men who work on piecework are earning larger wages than before and taking little interest in union matters. There are 17 shops affected by the strike, of which the largest are at Susquehanna and Meadville, Pa., and Hornell, N. Y.

#### Train Wreckers on the Erie and the Southern Pacific.

On Saturday night, May 25, an attempt was made to wreck Erie passenger train No. 6 at a point near Alden, N. Y., where the road runs on a deep fill across a long ravine. At a point in the middle of the curve a rail bolstered up by large stones was put across the eastbound track. The engineer saw the obstruction and applied the emergency brakes, in spite of which the locomotive struck the rail, but was not derailed, although the pilot was smashed.

On the morning of May 22, half an hour after midnight, train No. 20, the Coast Line Limited, on the Southern Pacific, was wrecked at West Glendale, Cal., 10 miles north of Los Angeles. One man was killed and 22 persons injured, three perhaps fatally. At a point on a trestle the fish plates and bolts of two connecting rails on the southbound track had been removed, and in the bolt holes strands of heavy wire were fastened at the end of each rail. From the appearance of the track after the wreck, it was evident that some person hidden on a hillside close to the trestle had pulled the wire as the train approached, and spread the rails outward toward the edge of the trestle. The train, three hours late, was traveling



at over 35 miles an hour. The engine wheels left the rails and the engine took to the ties for 100 yds. The tender, the dining car, two Pullmans, the buffet car, and the mail and baggage cars plunged over the edge of the trestle, falling 16 feet. The buffet car, the express car, and one of the Pullmans were turned upside down, and the others landed on their sides. All were badly crushed and splintered.

#### Hackensack Meadow Improvements.

The New Jersey Terminal Dock & Improvement Co. and the Hackensack Meadow Co. are to be reorganized and merged. Foreclosure proceedings have been begun against the Terminal Co., and similar proceedings are to be brought against the Hackensack Co., these steps being preliminary to the reorganization. The Terminal Co. was incorporated two years ago, and acquired over 90 per cent. of the stock of the Hackensack Meadow Co., and also the property of a construction company and 106 acres of land on the Hackensack Meadows. The two companies own 3,500 acres of land and have been filling in the meadows for terminal purposes.

#### Railroad Equipment Imported by Mexico.

The Mexican government has issued a statement of imports from the United States into Mexico of locomotives, freight railroad cars and rails during the eight months from July to February of the current fiscal year, as follows:

	Locomotives			Rails		
	No.	Total Value	Average	Tons.	Total Value	Per ton.
1906.						
July	5	\$37,328	\$9,332	1,150	\$36,467	\$31.46
August	4	52,580	13,145	3,713	109,180	29.40
September	7	106,550	15,221	778	22,853	29.37
October	11	143,125	13,011	1,305	48,254	36.69
November	23	321,839	13,993	3,832	114,689	29.92
December	23	267,054	11,612	3,901	142,286	36.47
1907.						
January	1	19,000	19,000	5,166	165,468	32.03
February	5	40,720	8,145	2,904	100,658	34.66
Eight months	76	\$988,696	\$13,009	22,758	\$739,855	\$32.50

The value of locomotives imported during the corresponding eight months of the preceding fiscal year was \$189,000. In corresponding months of last year \$1,120,613 worth of rails were imported, but that was a period of extensive railroad building and transformation from narrow to broad gage for the same months of 1904-05 the value was \$317,593, construction having been less. During these months of the current year, the value of passenger and freight cars bought by Mexico in the United States was \$1,520,941, as compared with \$680,244 in the same months of 1905-06, and \$410,283 in 1904-05.

#### First Car Over West Shore Electrified Lines.

The first electric car to run over the newly electrified line of the West Shore from Utica to Syracuse by its own power arrived in Syracuse on the evening of May 21, taking about an hour and a half for the run of 49 miles, including the distance in the central part of each city over the tracks of the local trolley lines. The third-rail, direct-current system now in operation in the New York terminal territory is used except within the city limits. The electrified line of the West Shore will continue to be used for freight trains.

#### Surprise Tests on the Pennsylvania.

The first report of signal tests on the Pennsylvania, made public six months ago, showed that on 2,252 trains tested, 97 per cent. of the enginemen complied implicitly with the letter of the signal rules, while the 3 per cent., who ran by signals, came to a stop a short distance beyond. During March the Central, the Elmira and Canandaigua and the Delaware divisions, and in April the Philadelphia Terminal, the Tyrone and the Buffalo divisions, had perfect records in these tests. The report for April showed that in 79 tests on the Pittsburg division, only one engineman failed to come to a stop before passing the signal. One careless engineman also was found on the Maryland division and one on the New York division, the train in the latter case passing the stop signal at a speed of about two miles an hour. Besides these surprise signal tests, the speed at which trains take crossover switches is closely watched.

#### What Happens to Old Railroads in Ireland.

Twelve miles of railroad between Birr and Parsontown in Ireland, according to a cable despatch from Dublin to the Chicago *Inter Ocean*, have disappeared. The road was built in 1868 and worked for a time by the Great Southern company, after which mortgagors took possession, but did not work the line. The authorities tried to collect taxes, but no one would admit ownership. The inhabitants of the region, seeing that they were deprived of the use of the railroad as a transportation agency, decided to get what advantage they could out of the road. This they did by carrying off

rails, buildings and all other equipment of the permanent way except a bridge, which still remains because the police objected to the use of a crane in removing the girders.

#### Central Office for Forest Service Tests.

The Forest Service recently established a central office at Washington for the management of timber tests and the compilation of data obtained at the various laboratories. McGarvey Cline, a graduate of Purdue University, has been put in charge. The timber tests of the Forest Service have hitherto been under the direction of Professor W. K. Hatt, of Purdue, who has found it necessary to relieve himself of these responsibilities.

#### Car of Coal Four Years on Road.

The fact that a car of coal ordered by a Chickasha dealer in October, 1903, did not reach its destination until January, 1907, was reported recently to the office at Guthrie, Okla., of Attorney-General Cromwell. The coal was ordered from the McAlester mines. Soon afterward, however, the Chickasha dealer sold his business, reporting the ordered car to his successor, and left the city. In January last, nearly four years later, the car arrived in Chickasha, billed to the original owner of the business in Chickasha, and his successor refused to receive it.—St. Louis *Globe-Democrat*.

#### New Ferry Boats for the Lackawanna.

The Norfolk & Washington Steamboat Company, of Norfolk, Va., is reported to have sold to the Delaware, Lackawanna & Western two ferry steamers recently built for operation between Washington, D. C., and Alexandria, Va. One of the steamers had been chartered by the Old Dominion line for service at the Jamestown Exposition, the other by the Chesapeake & Ohio for the same purpose. The latter boat will not be sent north till November.

#### Changes in the Department of Civil Engineering at Columbia University.

The testing laboratory at Columbia University will hereafter be a part of the Department of Civil Engineering. This laboratory, including the new 400,000-lb. Olsen machine, recently purchased, is now located on the first floor of the Engineering building. It is the purpose of the department to increase largely the equipment of the laboratory both in variety and capacity of machines by the purchase of a 500-ton machine for testing full-size compression and tension members 25 ft. long, a torsion machine of large capacity, an impact machine and the corresponding smaller appliances, tools, electric motors and other incidental equipment necessary for the complete working installation of the laboratory. This laboratory would have the widest range and greatest capacity for all classes of engineering investigation of the physical properties of every kind of structural material of any in the country, and would be second to none in the world.

#### New Rules for Transportation of Explosives.

The War Department has assigned Major Beverly W. Dunn, of the Ordnance Department, to take part in the preparation of new regulations for transportation of explosives by the American Railway Association. The committee of the association appointed for this purpose has made a preliminary report and expects to make a final report in October.

#### TRADE CATALOGUES.

*Track Supplies; Railroad Material*.—Catalogue No. 110, 1907 edition, of the Buda Foundry & Manufacturing Co., Chicago, has just been issued. It is much larger than any of its predecessors and is complete. The company's plant capacity has been considerably increased by the addition of new shops and machinery, which is noted in the catalogue. The products are carefully illustrated and described; they include scales; hand and push cars; velocipedes; rail-drilling machines; tool grinders; rail benders; track gages and levels; switch stands; ratchet, friction and ball-bearing jacks; car replacers; crossing gates; frogs, switches, crossings and special track work, and many additional miscellaneous appliances. Most of these products are also described in individual bulletins issued by the company, and many of them have been described in the *Railroad Gazette*. The new catalogue, which is a standard size (5 in. x 9 in.), has 330 pages, is bound in cloth and is excellently printed.

*Opportunities Along the Northern Pacific*.—The general emigration agent of the Northern Pacific Railroad has prepared a list of the business opportunities along the line of that road. The list is given by states, beginning at the eastern end of the line and taking them in order to the coast. The towns in each state are listed alpha-

betically. Essential information about existing conditions in each town is briefly given and the different openings there listed. At the front of the volume these openings are recapitulated alphabetically under the various sorts of businesses and professions. The book has 102 pages.

**Gages.**—The 1907 catalogue of the Ashcroft Manufacturing Co., New York, has 135 pages, is fully illustrated, and is bound in cloth. The products of the company include many types of gages for steam pressure, vacuum, water pressure, altitude, car heating, air brakes, etc. A large part of the catalogue is devoted to the Tabor indicator for taking indicator cards. These machines in various styles, as well as planimeters and other auxiliary apparatus, are made by the Ashcroft Co.

**Elgin & Belvidere Electric.**—Bulletin No. 17 of The Arnold Company, Chicago, describes the Elgin & Belvidere Electric, an interurban trolley line in Illinois, which The Arnold Company built. The road is 36½ miles long and was formally opened in February. It operates on three-phase alternating current. The engineering features, line construction, power generation and distribution, and equipment are described and illustrated fully.

**Denver & Rio Grande.**—"Camping in the Rocky Mountains," issued by the passenger department of this company, describes many regions in Colorado, Utah and Mexico where a vacation may be enjoyably spent. The pamphlet also gives useful suggestions for camp outfits for two to six persons, including the cost of supplies. Extracts from the game laws of Colorado and Utah are included.

**Coal-Handling Machinery.**—Catalogue No. 072 of the C. W. Hunt Co., West New Brighton, N. Y., describes electric freight-handling cranes, coal storage plants, coal-hoisting elevators, cable railroad conveyors, and a large line of accessories, including buckets, coal crackers, scales, coal valves, chutes, etc. The catalogue gives dimensions and capacities of different sizes of apparatus.

**Steam Shovels.**—Catalogue No. 67 of the Thew Automatic Shovel Co., Lorain, Ohio, describes and illustrates types of steam shovels ranging in capacity from ½ cu. yd. to 2½ cu. yds. Shovels for special purposes, such as ore handling, mining and cellar excavation, are also shown. The company also furnishes shovels driven by electric motors.

**Axle Lighting.**—Bulletin No. 5 of the Consolidated Railway Electric Lighting & Equipment Co., New York, describes, with photographs and drawings, the axle light equipment made for postal cars. The generator is belt driven and mounted on one end of a truck. In some cases two generators are desirable.

**Geo. P. Nichols & Bro.,** engineers and machinists, Chicago, have prepared a little two-leaf folder to show a floor plan of their new shop at 315 South Canal street, with a list of the tools contained. It illustrates their facilities for general machine work.

**Electric Fans.**—Bulletin No. 146 of the B. F. Sturtevant Co., Hyde Park, Mass., illustrates and describes, with dimensions, types of ventilating fans ranging in diameter from 18 in. to 120 in. The motors are regularly wound for 110 and 220 volts.

**Staybolts.**—The Flannery Bolt Co., Pittsburg, is distributing a circular describing Tate flexible staybolts and their advantages.

#### Manufacturing and Business.

A semi-annual dividend of 1½ per cent. has been declared on the capital stock of the William C. Baker Heating & Supply Co., New York.

A. R. Holliday, who recently resigned as Engineer of Maintenance of Way of the Vandalia at Indianapolis, is now Secretary of the National Concrete Co., Indianapolis.

The Bliss Electric Car Lighting Co., Milwaukee, Wis., expects to exhibit at the coming Atlantic City conventions complete 30-volt and 60-volt equipments for electric car lighting. They will be operated under conditions similar to those of actual service, and the methods of installing the equipment will be clearly demonstrated. The exhibit will occupy spaces 1,201 to 1,207, inclusive, on the south side of the steel pier. W. L. Bliss, John T. Dickinson and F. Urban, respectively President, Vice-President and General Manager of the company, will be in charge of the exhibit, assisted by district managers and others.

The United States Steel Corporation has ordered about \$5,500,000 worth of electrical equipment from the Allis-Chalmers Company, Milwaukee. Most of the order is for the new plant at Gary, Ind., where 16 generating units, developing about 10,000 k.w., and motors

ranging from 2,000 to 9,000 h.p. for driving the rolls in the rail mill and the machinery in the blooming and other mills will be installed. The generators are to be direct-connected to Allis-Chalmers gas engines, which will use blast furnace gas. Including orders for other plants of the steel company, 32 gas engine driven electric generators have been ordered from the Allis-Chalmers Company together with auxiliary apparatus required for these installations.

John E. Ward, Vice-President of the Gold Car Heating & Lighting Company, has decided to retire from the management of the Gold Companies for the purpose of engaging in the business of manufacturing and dealing in railroad, steamship and contractors' supplies. About July 1 he will start on an extended trip abroad, and on his return will open offices in New York City. Mr. Ward, who has been actively engaged for a number of years in the railroad supply business, was born at Poughkeepsie, N. Y., on June 3, 1875; received his early education in the public and high schools of that city, and in 1891 graduated from Manhattan College, New York City. He advanced rapidly from the duties of chief clerk, Shop Superintendent, Sales Agent and General Manager to the position of Vice-President of the Gold Companies. His experience and large circle of friends throughout the United States and Canada assure a still more successful career for Mr. Ward in his new undertaking.

#### Iron and Steel.

The Atlantic Coast Line has given an order for 1,400 tons of steel for bridges.

Negotiations are under way for 4,700 tons of bridge steel for two bascule bridges over the Chicago river.

The Chicago & North-Western and the Atchison, Topeka & Santa Fe are said to be in the market for between 40,000 and 50,000 tons of rails for 1908 delivery. The Chesapeake & Ohio is negotiating for 10,000 tons of rails, and the Harriman Lines for 25,000 tons of Bessemer rails.

#### MEETINGS AND ANNOUNCEMENTS.

(For dates of conventions and regular meetings of railroad conventions and engineering societies, see advertising page 24.)

##### Engineers Club of Philadelphia.

At a meeting of this club to be held June 1, a paper on "Ball and Roller Bearings in Practical Operation," by S. S. Eveland, illustrated by lantern slides, will be presented.

#### ELECTIONS AND APPOINTMENTS.

##### Executive, Financial and Legal Officers.

**Buffalo & Susquehanna.**—Charles W. Goodyear, First Vice-President, has been elected President, succeeding F. H. Goodyear, deceased. A. C. Goodyear succeeds C. W. Goodyear as First Vice-President.

**Wabash.**—Henry Miller, General Manager, has been elected also Vice-President. Mr. Miller was born in 1863 at Hannibal, Mo.,



Henry Miller.

and began railroad work in 1878 as boiler maker's apprentice on the Hannibal & St. Joseph, now part of the Burlington. After serving as switchman and then yard master, he was, in 1890, made Trainmaster of the St. Louis, Keokuk & Northwestern. Two years later he was appointed Assistant Superintendent of that road, and later was made also Assistant Superintendent of the Chicago, Burlington & Kansas City. In 1902 he was appointed Superintendent of both roads, and the next year General Superintendent of both roads and also of the Kansas City, St. Joseph & Council Bluffs; all of these roads are part of the C., B. & Q. In 1904 he was appointed General Superintendent of the Iowa district of the Chicago, Burlington & Quincy, and in 1905 he was appointed General Manager of the Wabash.



**Chicago, Rock Island & Pacific.**—E. L. Pollock, Purchasing Agent of the New York, New Haven & Hartford, has been elected Vice-President in charge of purchases of the Chicago, Rock Island & Pacific, the St. Louis & San Francisco, the Chicago & Eastern Illinois and the Evansville & Terre Haute.

**Delaware & Hudson.**—W. H. Williams has been appointed Assistant to the President, with office at New York.

C. S. Sims, General Manager, has been elected also a Director, succeeding Abel I. Culver, resigned.

**Mexican Central.**—J. A. Naugle, formerly Assistant General Manager of the Sonora Railway, has been appointed Assistant to Vice-President C. R. Hudson, of the Mexican Central.

See Rio Grande, Sierra Madre & Pacific.

**New York, New Haven & Hartford.**—J. M. Tomlinson, Auditor of Freight Receipts, has been appointed General Auditor. Alfred Mackville, chief traveling auditor, succeeds Mr. Tomlinson.

See Chicago, Rock Island & Pacific.

**Rio Grande, Sierra Madre & Pacific.**—H. R. Nickerson, who recently resigned as Vice-President of the Mexican Central, has been elected President of the Rio Grande, Sierra Madre & Pacific.

**St. Louis & San Francisco.**—See Chicago, Rock Island & Pacific.

#### Operating Officers.

**Buffalo & Susquehanna.**—G. D. Reynard, chief train despatcher of the Buffalo division, has been appointed Trainmaster at Galeton, Pa.

**Detroit, Toledo & Ironton.**—H. E. Warner has been appointed Trainmaster at Springfield, Ohio, succeeding George E. Stott.

**Fonda, Johnstown & Gloversville.**—J. N. Shannahan, General Superintendent, has resigned to become General Manager of the Washington, Baltimore & Annapolis Electric. W. H. Collins, Master Mechanic, succeeds Mr. Shannahan, with office at Gloversville, N. Y.

**Mexican Central.**—M. B. Murphy has been appointed Trainmaster of the Chihuahua division, succeeding W. B. Tucker, assigned to other duties.

**Mexican International.**—A. Clark, General Manager of the National Railroad of Mexico, has been appointed also General Manager of the Mexican International, succeeding W. S. Martin, resigned.

**National of Mexico.**—See Mexican International.

**St. Louis & San Francisco.**—J. W. Ashley, Superintendent of Car Service, has resigned to become Manager of the Missouri Valley Car Service Association at Kansas City. E. D. Levey, Assistant Superintendent of Car Service, has been appointed to the new office of Superintendent of Transportation, succeeding to the duties of Mr. Ashley, whose former office has been abolished.

**Wheeling & Lake Erie.**—J. G. Code, Assistant Superintendent, has been appointed Superintendent, with office at Canton, Ohio, succeeding C. V. Wood, resigned to go to the New York, New Haven & Hartford. A. P. Titus, Superintendent of Car Service, succeeds Mr. Code, with office at Canton. C. W. Miller, Trainmaster at East Toledo, Ohio, succeeds Mr. Titus, with office at Pittsburg. D. R. Webner, Trainmaster at Rook, Pa., succeeds Mr. Miller. C. O. Dambach, chief clerk to the General Superintendent, succeeds Mr. Webner.

#### Traffic Officers.

**Chesapeake & Ohio.**—A. L. Ellett has been appointed General Western Passenger Agent, with office at Cincinnati, succeeding J. D. Potts, promoted.

**Chicago, Rock Island & Pacific.**—J. G. Doolittle, traveling freight agent, has been appointed General Agent of the Chicago, Rock Island & Pacific and of the St. Louis & San Francisco at Salt Lake City.

**Great Northern.**—W. P. Kenney has been appointed Assistant Traffic Manager, with office at St. Paul.

**Lake Shore & Michigan Southern.**—See New York Central Lines.

**New York Central Lines.**—H. Bromley, General Ore and Coal Agent of the Lake Shore & Michigan Southern, has been appointed General Ore and Coal Agent of all New York Central Lines west of Buffalo, with office at Cleveland, Ohio.

**St. Louis & San Francisco.**—See Chicago, Rock Island & Pacific.

**Union Pacific.**—Gerritt Fort, Assistant General Passenger Agent at Omaha, Neb., has resigned to go to the New York Central & Hudson River.

#### Engineering and Rolling Stock Officers.

**Erie.**—Albert Swartz, who was recently appointed Division Engineer at Huntington, Ind., was born in 1878 at Columbus, Ohio. He graduated from High School at Toledo, Ohio, in 1894, and the next year began railroad work as a rodman on the Ann Arbor Railroad. The next year he went to the Cincinnati, Hamilton & Dayton as yard clerk at Toledo, and then was transitman on municipal work and electric railways until the end of 1898, when he went to the Tennessee Central to do similar work. In 1899 he left on account of sickness and soon after was made a draftsman in the Cleveland office of the Lake Shore & Michigan Southern. In the summer of 1901 he went to the Baltimore & Ohio as draftsman on construction work, and the next summer was made Assistant Division Engineer of Maintenance of Way at Baltimore. After a year he returned to the Chief Engineer's office as draftsman, and was later made chief draftsman. While in this position he designed the Washington terminal yards. In the winter of 1905 he was in charge of engineering design on improvements at Baltimore, and then went to the Erie as chief draftsman in the construction department at New York. The most important work he did in this position was on the Jersey City terminal improvements and masonry designed for new work. He was promoted to his present position early this month.

**Tehuantepec National.**—George Budge, roadmaster of the Matamoras division of the National of Mexico, has been appointed Superintendent of Maintenance of Way of the Tehuantepec National, with office at Rincon Antonio, Oaxaca.

**Tonopah & Goldfield.**—W. B. Chapin, Chief Engineer, has resigned.

#### LOCOMOTIVE BUILDING.

**Bond Brothers,** Bond, Md., have bought a locomotive.

**The Kahului Railroad** has ordered one locomotive from the Baldwin Locomotive Works.

**The Illinois Terminal** has ordered one locomotive from the Baldwin Locomotive Works.

**The Cambria Steel Co.** has ordered one locomotive from the Baldwin Locomotive Works.

**The Cornwall & Lebanon** has ordered one locomotive from the Baldwin Locomotive Works.

**The Louisville & Atlantic** has ordered one locomotive from the Baldwin Locomotive Works.

**The Imboden Coal & Coke Co.** has ordered one locomotive from the Baldwin Locomotive Works.

**Schill, Selbohm & Co., Ltd.,** has ordered one locomotive from the Baldwin Locomotive Works.

**The Wrightsville & Tennille** has ordered one locomotive from the Baldwin Locomotive Works.

**The Buffalo Union Furnace Co.** has ordered one locomotive from the American Locomotive Works.

**The National Railroad of Haiti** has ordered two locomotives from the Baldwin Locomotive Works.

**The Central Santa Lucia (Cuba)** has ordered one locomotive from the Baldwin Locomotive Works.

**Norton, McGraw & Co. (Brazil)** has ordered one locomotive from the Baldwin Locomotive Works.

**The Moron Sugar & Land Co., Cuba,** has ordered four broad gage locomotives from the Baldwin Locomotive Works.

**The Long-Bell Lumber Co.,** Kansas City, Mo., will order four additional locomotives from the Baldwin Locomotive Works.

**The Danish Department of Public Works,** Copenhagen, Denmark, it is reported, is in the market for three passenger locomotives.

**The Due West Railway,** under construction in South Carolina, is in the market for locomotives. R. S. Galloway, Due West, S. C., is President.

**The Savannah & Southwestern,** projected from Clyde, Ga., to St. Andrews Bay, Fla., 350 miles, will ask bids on locomotives in a few weeks. Harvey Granger, President, Savannah, Ga.

**The Texas & Pacific,** it is reported, has ordered forty 10-wheel locomotives from the American Locomotive Company for September and October delivery. These locomotives will weigh 200,000 lbs.

**The Chicago & Milwaukee Electric,** as reported in the *Railroad Gazette* of March 1, has ordered two locomotives from the Baldwin Locomotive Works and two locomotives from the American Locomotive Works.

**The Charlestown & Western Carolina,** as reported in our ad-

vance sheet of May 18, has ordered two 10-wheel freight locomotives, cylinders 20 in. x 26 in., and two consolidation locomotives, cylinders 21 in. x 28 in., from the Baldwin Locomotive Works.

The Bolivia Railway has ordered four simple, consolidation, 3-ft. 3-in. gage locomotives from the American Locomotive Company for November delivery.

General Dimensions.	
Type of locomotive .....	Consolidation
Weight on drivers .....	129,000 lbs.
Total weight .....	143,000 "
Diameter of cylinders .....	19 in. x 24 in.
Diameter of drivers .....	44 "
Boiler, type .....	Straight top
" working steam pressure .....	180 lbs.
" heating surface, total .....	1,903 sq. ft.
Firebox, length .....	84 in.
Firebox, width .....	54 "
Grate area .....	31.5 sq. ft.
Tank capacity .....	6,000 gals.
Coal capacity .....	8 tons

Special Equipment.	
Air-brakes .....	Westinghouse
Valves .....	Richardson
Valve gear .....	Walschaert
Sanding devices .....	Pneumatic
Spring .....	Pittsburg Steel & Spring Co.
Tires, driving wheel .....	Latrobe

The Chilean State Railways, as reported in the Railroad Gazette of May 17, have ordered five 5-ft. 6-in. gage, six-wheel switching side tank locomotives for September, 1907, delivery, and 20 5-ft. 6-in. simple mogul locomotives for September and October, 1907, delivery from the Baldwin Locomotive Works.

General Dimensions.		
Type .....	Mogul.	Switching.
Weight on drivers, about ..	79,000 lbs.	73,000 lbs.
Total weight .....	98,500 lbs.	73,000 lbs.
Diameter of cylinders .....	17 in.	15 in.
Stroke of piston .....	24 "	22 "
Diameter of drivers .....	54 1/2 "	42 "
Boiler, type .....	Crown bar; straight top.	Radial stayed; straight top.
Working steam pressure ..	160 lbs.	160 lbs.
Heating surface, total .....	1,127 sq. ft.	545 sq. ft.
Tubes, number .....	186	106
" material .....	Iron.	Iron.
" outside diameter .....	2 in.	1 3/4 in.
" length .....	10 ft. 8 5/8 in.	10 ft. 1 in.
Firebox, length .....	55 3/4 in.	52 1/16 in.
" width .....	43 in.	42 in.
" material .....	Steel.	Steel.
Grate area .....	16 sq. ft.	14 sq. ft.
Tank capacity .....	3,000 gals.	700 gals.
Coal capacity .....	6 tons.	About 1 ton.

The Intercolonial, as reported in the Railroad Gazette of May 17, has ordered 10 simple consolidation (2-8-0) locomotives from the Canadian Locomotive Company.

General Dimensions.	
Type .....	Consolidation
Weight on drivers .....	148,800 lbs.
Total weight .....	164,880
Diameter of cylinders .....	21 in.
Stroke of pistons .....	28 "
Diameter of drivers .....	56 "
Boiler, type .....	Straight top
" working steam pressure .....	200 lbs.
" heating surface, total .....	2,095.7 sq. ft.
Tubes, number .....	256
" material .....	Charcoal iron
" outside diameter .....	2 1/4 in.
" length .....	14 ft.
Firebox, length .....	114 in.
" width .....	41 "
Grate area .....	32.5 sq. ft.
Tank capacity .....	6,000 gals.
Coal capacity .....	10 tons

Special Equipment.	
Air-brakes .....	Westinghouse
Bell ringer .....	Intercolonial standard automatic
Boiler lagging .....	Asbestos sectional
Brake-beams, tender .....	Simplex
Brake-shoes .....	American Brake-Shoe & Foundry Co.
Couplers .....	Washburn
Draft gear .....	Minder tandem
Headlights .....	Pyle electric
Injector .....	Hancock Inspirator Co.
Journal bearings .....	Ajax
Safety valve .....	Coale
Sanding devices .....	Wilson
Sight-feed lubricators .....	Detroit
Steam heat equipment .....	Safety Car Heating & Lighting Co.

#### CAR BUILDING.

The Chicago Great Western is in the market for 1,000 box cars.

The Moron Sugar & Land Company, Cuba, has ordered several cars.

The Pere Marquette is reported to be in the market for 750 gondola cars.

The Southern Pacific has ordered three observation cars from the Pullman Company.

The New York Central Lines are asking bids on 19 combination mail and baggage cars.

The Public Service Corporation of New Jersey has ordered 200 electric cars from the Cincinnati Car Co.

The Danish Department of Public Works, Copenhagen, Denmark, is reported in the market for 12 passenger cars.

The Charlestown & Western Carolina, it is reported, has ordered two 60-ft. passenger cars from Harlan & Hollingsworth.

Fox Brothers & Co. are reported to be figuring on ten cars of 60,000 lbs. capacity with the Ralston Steel Car Company.

The Due West Railway, under construction in South Carolina, is in the market for cars. R. S. Galloway, Due West, S. C., is President.

The Manistee & Grand Rapids is in the market for 50 gondola cars of 80,000 lbs. capacity, 25 flat cars of 60,000 lbs. capacity, and 25 second-hand flat cars.

The Krause & Managan Lumber Co., Lake Charles, La., is reported to have placed orders for four narrow gage logging cars with the Orange Iron Works.

The Union Pacific has ordered three observation smoking cars from the Pullman Co., instead of three dining cars, as reported in our advance sheet of May 15.

The Mexico, Santa Fe & Perry Traction, projected from Mexico, Mo., to Perry, 27 miles, will be in the market for rolling stock in about 30 days. S. L. Robison, President, Mexico, Mo.

The Savannah & Southwestern, projected from Clyde, Ga., to St. Andrews Bay, Fla., 350 miles, will ask bids on rolling stock in a few weeks. Harvey Granger, President, Savannah, Ga.

The Seaboard Air Line is said to have decided to postpone, on account of the condition of the money market, the ordering of 1,500 cars for which they were in the market, as reported in the Railroad Gazette of April 19.

The Wagner, Lake Shore & Armour Traction, recently incorporated to build an electric line from Wagner, S. Dak., to Mitchell, 65 miles, will be in the market for rolling stock in about 90 days. A. H. Pease, Wagner, S. Dak., may be addressed.

The Atlanta, Birmingham & Atlantic, as reported in the Railroad Gazette of May 24, has ordered for delivery by December 1, 500 40-ft. box cars of 60,000 lbs. capacity, and 300 40-ft. flat cars of 60,000 lbs. capacity from the American Car & Foundry Company; and 900 40-ft. coal cars of 80,000 lbs. capacity and 30 cabooses from the South Atlantic Car & Manufacturing Company.

The Baton Rouge Electric & Gas Company, Baton Rouge, La., as reported in the Railroad Gazette of May 10, has ordered nine semi-convertible cars from the St. Louis Car Co. These cars will be 31 ft. long over all and 8 ft. 8 in. wide, inside measurement. The special equipment includes:

Brake-shoes .....	Diamond "K."
Light .....	Kransharr
Seats .....	St. Louis Car Co.
Trucks .....	St. Louis Car Co.

The Richmond, Fredericksburg & Potomac, as reported in the Railroad Gazette of May 24, has ordered 200 box cars of 80,000 lbs. capacity from the Western Steel Car & Foundry Company for August, 1907, delivery, and 100 low side gondola cars of 100,000 lbs. capacity from the Pressed Steel Car Company for October, 1907, delivery. The box cars will weigh 37,500 lbs. and the gondolas 38,000 lbs. The special equipment for both includes:

Bolsters .....	Bettendorf
Brake-beams .....	Waycott
Brake-shoes .....	American Brake-Shoe & Foundry Co.
Brakes .....	Westinghouse
Brasses .....	Damascus Bronze Co.
Couplers .....	Janney
Door fastenings, for box cars .....	Wagner
Doors, for box cars .....	Wagner
Draft rigging .....	Farlow tandem
Dust guards .....	Harrison
Paint, for box cars .....	Hildreth special freight car
Paint, for gondola cars .....	Hildreth steel preservative
Roofs, box cars only .....	Hutchins inside metal
Spring .....	Pittsburg Spring & Steel Co.
Trucks .....	Bettendorf side frames

#### RAILROAD STRUCTURES.

AURORA, ILL.—The Chicago, Burlington & Quincy, it is said, will make improvements here to include a new passenger station, elevate its tracks, build a new freight yard, new locomotive shop and freight house at a cost of about \$2,000,000.

BLADELL, N. Y.—The car barns of the Buffalo & Lake Erie Traction Company at this place were burned recently together with 25 cars. The loss is estimated at \$100,000.

BUYRUS, OHIO.—The Ohio Central is making additions to its shop here. The building when finished is to be 90 ft. wide and 800 ft. long.

DEFIANCE, OHIO.—The City Council has under consideration the question of granting concessions to the Baltimore & Ohio to enable it to make improvements at a cost of \$300,000.

GALVESTON, TEX.—The Gulf & Interstate, it is said, is planning to make improvements at Point Bolivar, which is across the bay from Galveston. The work will include a pier 900 ft. wide and 1,000 ft. long, with a central slip 300 ft. wide and 500 ft. long.

LOGAN, OHIO.—Contract is reported let by the Hocking Valley for repair shops here to cost \$90,000.



**REDDING, CAL.**—Bids are wanted July 10, by the Board of Supervisors, for a steel bridge to have a 60-ft. also a 310-ft. span on concrete piers, with 18-ft. roadway, over the Sacramento river. Robert L. Reading, County Surveyor.

**SALT LAKE CITY, UTAH.**—The Salt Lake City Union Depot Co. has been incorporated in Utah, with \$200,000 capital. E. T. Jeffrey is President. This means that the revision of plans for construction of the Gould terminal station here has been finished and that work will be pushed to an early completion.

**SAN ANTONIO, TEX.**—The International & Great Northern has plans ready and will soon ask bids for building a new passenger station here to cost between \$150,000 and \$200,000.

**TOLEDO, OHIO.**—The Lake Shore & Michigan Southern, it is said, has plans ready for a new brick office building and freight house, also a freight shed 600 ft. long.

## RAILROAD CONSTRUCTION.

### New Incorporations, Surveys, Etc.

**ANTOINE VALLEY.**—Application has been made in Arkansas by a company under this name, with \$150,000 capital, to build a line from Graysonia, Ark., to Arkadelphia, 27 miles. W. Grayson, N. W. McLeod, J. S. Cargile, G. M. Grayson and I. M. Seller, of Arkadelphia, are interested.

**ARIZONA ROADS.**—Ray and Gila copper companies, local reports state, are asking bids for building a line from Kelvin, Ariz., to Ray, seven miles.

**ATCHISON, TOPEKA & SANTA FE (COAST LINES).**—A contract has been let by this company to Grant Bros. to build a short cut-off west to Rio Puerco, N. Mex., the western terminus of the Eastern Railway of Oklahoma or Belen cut-off. On completion of the new line, the section from Sandia Station to Rio Puerco is to be abandoned.

**BALTIMORE & OHIO.**—An officer writes that this company proposes to build an extension of the Quemahoning branch from Boswell, Pa., to the mines of the Somerset Coal Company, about four miles. The Quemahoning branch connects with the Somerset & Cambria branch at Quemahoning Junction, which connects with the main line of the B. & O. at Rockwood, Pa.

**BOSTON & PROVIDENCE INTERURBAN.**—Mayor Fitzgerald, of Boston, Mass., favors granting a charter to this company to build an electric line from Boston to Providence, R. I., about 50 miles. William A. Gaston, of Boston, is interested in the project.

**BUFFALO, GENESEE & ROCHESTER (ELECTRIC).**—Incorporated in New York with \$7,500,000 capital and office at Depew, in Erie County. The company proposes to build a line from Depew northeast to Rochester, 60 miles, with a branch south to Leroy, in Genesee County, five miles. The promoters include: Henry H. Kingston, J. J. Collier, J. A. Harris, Jr., S. Welch and T. H. Dixon, of Philadelphia; W. B. Cutler, J. H. Baker and H. P. Bissell, of Buffalo. The proposed line, it is reported, will be operated as an extension of the Buffalo & Depew, which is owned by the promoters of the new project.

**CANADIAN PACIFIC.**—Contract reported let to G. A. Begg & Co., of St. Catharines, Ont., for reducing grades and straightening curves on the line from Woodbridge, Ont., to Bolton, 10 miles.

**CHICAGO SOUTHERN.**—According to reports from Chicago, the syndicate recently formed for taking over the John R. Walsh system and extending it into Chicago, Ill., 38 miles, has the necessary funds amounting to \$2,500,000 subscribed. The first instalment is to be paid this month. Work is to be started at once and finished about the first of August. The syndicate managers are J. R. Walsh, J. N. Faithorn and Orrville S. Babcock.

**COLORADO ROADS (ELECTRIC).**—Contract has been given to Joseph A. Osner, of Denver, for building an electric line from Englewood, Colo., south via Littleton to Roxborough Park, about 15 miles. The project is being financed by H. W. Hartman, T. B. Doane and other Denver capitalists.

**ERIE.**—This company is considering the question of resuming work on the Erie & Jersey, on which work was suspended about April 1. The line is to be built from Howells, N. Y., to Guymard, 42 miles, and includes a double-track tunnel 5,300 ft. long through the Shawangunk mountains. (March 29, p. 467.)

**ERIE & JERSEY.**—See Erie.

**INDIANAPOLIS, CRAWFORDSVILLE & WESTERN TRACTION.**—This company, incorporated in Indiana in 1903 to build an electric line from Indianapolis, Ind., west to Danville, Ill., has about finished the first section from Indianapolis to Crawfordsville, 45 miles. The western extension to Danville, Ill., will be soon started. The bridges are to be either of concrete or steel, and the rails of 70 and 85-lb. section.

Entrance into Indianapolis is to be made over the West Michigan street loop to Indiana avenue, thence to the terminal station of the Indianapolis Traction Terminal Company. A. E. Reynolds, President, Crawfordsville; E. Hawkins, Secretary; O. P. Ensley, Treasurer, Indianapolis.

**KANSAS TRACTION.**—Organized in Kansas to build an electric line from Coffeyville north to Topeka, thence east via Lawrence to Kansas City, 225 miles. F. B. Shirley, of Coffeyville, is President.

**LEETONIA RAILWAY.**—An officer writes that this company, which operates 17 miles of road in Tioga County, Pa., has given contracts to Peter Pascuzzi, of Kane, Pa., for building three miles of road from Lick Run to Painter Run. C. A. Derr, Chief Engineer, Williamsport, Pa.

**LONG ISLAND.**—Preliminary surveys, it is said, are being made by this company for an extension of its Wading River branch from Wading River, N. Y., south to a connection with the main line at Manor, about six miles.

**LYNCHBURG BELT LINE & CONNECTING RAILWAY.**—See Norfolk & Western.

**MEXICAN ROADS.**—The International Land & Mining Company, of Arizona, it is said, has bought 1,200,000 acres of land in Mexico near the Texas border from General Naranjo, of Monterey, and will build a line 90 miles long to coal fields.

Application was recently made to the Mexican Government by J. P. Taylor, of Mexico City, for a concession to build a line from Comacho on the Mexican Central, in the northern part of the state of Zacatecas, to Bonanza. It is said that capital has been secured to carry out the work and surveys are nearly finished.

The Colima Lumber Company, it is said, will build a line from a point on the Mexican Central, near Colima, Mex., to timber lands at the base of Mount Colima. The line has been located and work is to be started soon.

**MISSOURI, KANSAS & TEXAS.**—Local reports state that this company is planning to build a road from its line at Iola, Kan., south to Humboldt, about 10 miles. The work will include a bridge over the Neosho river. The Atchison, Topeka & Santa Fe operates a line through these places.

**NATIONAL LINES OF MEXICO.**—The Mexican government has under consideration the building of extensions and branch lines. Part of these plans which have been agreed upon will probably be made public soon after the details for the merging of the Mexican Central into the government system are completed. The proposed work is to include a line up the valley of the Rio Grande for probably 400 miles. The Monterey-Matamoras line of the National now runs down the valley of the Rio Grande from Camargo to Matamoras, about 80 miles. It is planned to build the proposed extension from Camargo through the valley northwest to about opposite Del Rio, Texas. It is about 100 miles from Camargo to Laredo, Texas, and another 100 miles from Laredo to Eagle Pass, Texas. The proposed line is to connect with the main line of the National at Nuevo Laredo, opposite Laredo, and with the International at Ciudad Porfirio Diaz, opposite Eagle Pass. At Las Vacas, 50 miles above Ciudad Porfirio Diaz, it is to connect with the branch the Kansas City, Mexico & Orient is building south from San Angelo, Texas. It is intended to ultimately extend the line to El Paso, Texas, about 500 miles from Las Vacas.

**NEW YORK CENTRAL & HUDSON RIVER.**—The O'Rourke Engineering & Construction Company has withdrawn from the work of excavating the site for the New York Central's new terminal in New York. The company, it was reported, has under consideration the temporary abandonment of the main plans for a new terminal, but it is thought that the railroad will go ahead with the work.

**NEW YORK TUNNELS.**—The New York Tunnel Co., contractors for the Battery tunnels of the Rapid Transit Subway extension to Brooklyn under the East river, was placed in the hands of a receiver on May 23. The receiver will carry on the work, which is nearly finished.

**NORFOLK & WESTERN.**—An officer writes that about 60 per cent. of the work on the Lynchburg Belt Line & Connecting Railway, hitherto known as the low-grade line, under construction from a point on the Durham line, from 12th street station at Lynchburg, west to Forest, 7.60 miles, also from the same point on the main line east to Concord, 14.52 miles, has been finished. The line is being built to reduce the grades around Lynchburg, Va., and will shorten the distance over the existing line about three miles.

**PENNSYLVANIA.**—This company, it is said, will abandon the terminus of the Pennsylvania & Northwestern division at Bellwood, Pa., and establish a new terminus at Tipton, four miles northeast of Bellwood. The company is planning to build a new line between Glasgow and Tipton to secure easier grades.

**PINE BLUFF NORTH & SOUTH.**—It is reported that this company

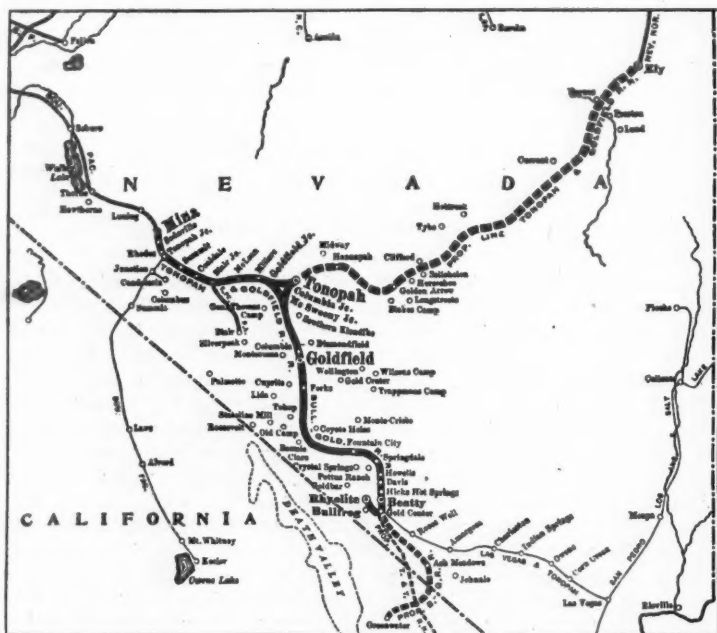
plans to build from Memphis, Tenn., south to Shreveport, La. The first section to be built will be from Pine Bluff, Ark., to Lonoke or Devalls Bluff, where connection is to be made with the Rock Island. On the completion of this section work will be started from Pine Bluff north to Memphis, and to Shreveport, on the south end. E. B. Bloom is a director.

**SHAWNEE CENTRAL.**—Incorporated in Oklahoma with \$10,000,000 capital, and office at Shawnee. The company proposes to build a line from Muskogee, Okla., southwest via Shawnee to Childress, Texas, 300 miles; also from Shawnee northeast to Tulsa, 80 miles, through the Creek, Seminole and Chickasaw Indian nations. Dr. W. S. Woods, President of the National Bank of Commerce of Kansas City, Mo., is an incorporator.

**SOUTHERN DEVELOPMENT COMPANY.**—Bids are wanted about June 1 by J. M. Parker, General Manager, Monroe, La., for grading 63 miles for a steam railroad between Monroe, La., and Crossett and Hamburg, Ark.

**TOLEDO, WABASH & ST. LOUIS.**—Surveys made for a line from Toledo, Ohio, southwest to Defiance, 50 miles, and contract let for some of the grading. Preliminary surveys are being made from Defiance southwest to Fort Wayne, Ind. L. H. Chenoweth, formerly in charge of construction on the Wheeling & Lake Erie, is in charge of the construction.

**TONOPAH & GOLDFIELD.**—This company, operating a line from Mina, Nev., on the Southern Pacific, southeast to Tonopah, thence south to Goldfield, 100 miles, last year started work on an extension under the name of the Bullfrog-Goldfield Railroad, south to Bullfrog and Rhyolite. This extension is now in operation as far as



Tonopah & Goldfield.

Springdale, and it is expected next month to have the line finished to Bullfrog, 83 miles from Goldfield, and to Rhyolite. An extension is projected from the main line at Tonopah, northwest to a connection with the Nevada Northern at Ely, 160 miles, also one from the southern end near Bullfrog, south to Greenwater, Cal.

**WAGNER, LAKE SHORE & ARMOUR TRACTION.**—An officer writes that contracts are to be let in about 60 days for building this proposed electric line from Wagner, S. Dak., north via Lake Shore, Armour and Hillside to Mitchell, 65 miles. There are to be between four and six bridges on the line. A. H. Pease, Wagner, S. Dak., may be addressed. (May 10, p. 664.)

**WHEELING & LAKE ERIE.**—This company, it is said, has finished a three-mile extension at Oneida, Ohio, to the industrial plants of that district. It joins Oneida and Malvern, connecting at the latter place with the Cleveland & Pittsburgh division of the Pennsylvania Lines West.

#### RAILROAD CORPORATION NEWS.

**CHICAGO GREAT WESTERN.**—The \$2,000,000 4 per cent. debenture stock, which is to be listed on the New York Stock Exchange, is issued as of June 1. The proceeds are to be used in part to refund the company for construction work done in 1906, 25 miles of double-tracking between Galena and Stockton, and double-track work on the Eastern division.

**CHICAGO, ROCK ISLAND & PACIFIC.**—This company has sold to Speyer & Co., New York, \$10,000,000 first and refunding mortgage, 4 per cent. bonds of 1934, making \$66,851,000 outstanding of the

\$163,000,000 authorized. The proceeds of the sale are to be used for refunding the \$7,500,000 three-year, 4½ per cent. notes maturing on July 1, 1907, and for betterments. The bankers are offering the bonds at 87 and accrued interest.

**DELAWARE & HUDSON.**—This company has sold to Kuhn, Loeb & Co. and the First National Bank of New York, \$10,000,000 equipment first lien, 4½ per cent., 15-year bonds, dated July 1, 1907, for a price said to be 94¼. The bankers are offering these to the public at 95. The bonds are a first charge on equipment valued at \$11,000,000, and have a sinking fund of \$650,000 a year. The bonds conform to the new insurance laws, so that insurance companies can buy them.

**FLINT RIVER & GULF.**—See Gulf Line Railway.

**GULF LINE RAILWAY.**—This company is to be incorporated as a consolidation of the Flint River & Gulf, which runs from Ashburn, Ga., to Bridgeboro, 32 miles, and the Hawkinsville & Florida Southern, running from Hawkinsville, Ga., to Worth, 44 miles. The last named line is leased to the Flint River & Gulf. The present operating company has a trackage agreement with the Georgia Southern & Florida by which it operates trains over the three miles of road between Worth and Ashburn. It is understood that the new company expects to eventually have a line from Augusta, Ga., to the Gulf of Mexico, with trackage rights into Atlanta, Ga.

**HAWKINSVILLE & FLORIDA SOUTHERN.**—See Gulf Line Railway.

**MEXICAN RAILWAY.**—A dividend of 1½ per cent. was paid on May 17 on the £1,011,960 (\$4,908,000) second preferred stock. The only previous dividend paid on this stock was one of 3¼ per cent. in November, 1906.

**MEXICAN SOUTHERN.**—An annual dividend of 3 per cent. on the £1,000,000 (\$4,850,000) capital stock was paid on May 9. The dividend rate has been 2½ per cent. for the last three years.

**MISSOURI, KANSAS & TEXAS.**—This company is suing the United States in the Court of Claims for about \$61,000,000, the value of 3,064,390 acres of land in Indian Territory. A previous suit, instituted by the state of Kansas in behalf of the railroad company, was dismissed by the United States Supreme Court on the ground that the railroad company, and not the state, should be the complainant. The land in question consists of the odd numbered sections for 20 miles on each side of the railroad's 240 miles of right of way through Indian Territory. It was granted in 1866 to the state of Kansas for the use of the Kansas & Neosho Valley Railroad, a predecessor of the M., K. & T. The same land was granted to five Indian tribes, and the grant to the railroad was to become effective when the Indians' title to the land should lapse, by treaty or otherwise, provided also that the land became a part of the public lands of the United States. The railroad company now contends that in 1897, by an Act of Congress, the land was allotted to individual Indians, before that time the tribes having worked the land in common. The railroad alleges that this process destroyed the Indians' original title, and that when the lands were, in 1897, surveyed and divided into sections and townships like public lands in other places, they therefore became public lands. Consequently, it contends that the terms of the grant of the land to the railroad were then fulfilled. The railroad company notified the Government's agents of these matters at that time, but, in spite of this, the Indians were allowed to take possession. The amount sued for is nearly as much as the par value of the outstanding common stock of the M., K. & T.

**NEW YORK, NEW HAVEN & HARTFORD.**—This company has announced an increase in its capital stock from \$100,000,000 to \$130,000,000. Last January the directors voted to issue \$30,000,000 additional stock when market conditions favored it. The new stock may have been issued either for exchange with all the Boston & Maine stock, whose market value is about the same as the market value of this new New Haven stock, or for purposes connected with the proposed consolidation of the Consolidated Railway and the New England Navigation Company with the New York, New Haven & Hartford.

**ROCK ISLAND COMPANY.**—See St. Louis, Brownsville & Mexico.

**ST. LOUIS, BROWNSVILLE & MEXICO.**—It is said that Harriman interests have acquired control of this company, which owns 344 miles of road running from Brownsville, Tex., on the Mexican boundary, northerly to Alcoa, from which point surveys have been made east to Galveston and north to Houston. A branch from Robstown, Tex., northwest to San Antonio, 125 miles, is proposed. The road has been controlled by B. F. Yoakum, Chairman of the Board of the Rock Island Company, and associates. If control were acquired by the Harriman interests, the road could be operated in connection with the Texas lines of the Southern Pacific.

**SOUTHERN PACIFIC.**—See St. Louis, Brownsville & Mexico.